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MINUTES OF THE MEETING OF THE NORTH CENTRAL CORN
BREEDING RESEARCH COMMITTEE

1962

Reported by
G. F. Sprague, Secretary

Crops Research Division
Agricultural Research Service
United States Department of Agriculture
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NORTH CENTRAL CORN BREEDING RESEARCH COMMITTEE

MORNING SESSION, MARCH 7

The North Central Corn Breeding Research Committee was called to order by Chairman W. A. Russell at 9:00 a. m. After general introductions Administrative Advisor, Director N. J. Volk, commented briefly on the history and functions of the Corn Breeding Research Committee and wished them continuing success in future undertakings.

Chairman Russell pointed out the desirability of a change in the system of electing representatives to the Executive Committee. After some discussion it was MOVED by Zuber "That the Corn Breeding Research Committee elect one new member to the Executive Committee each year, the term of office being 4 years."

The motion was seconded by Leng and carried.

Chairman Russell then appointed a nominating committee consisting of Rossman, Chairman; Penny and Lonnquist. The Committee then proceeded to a consideration of the several Subcommittee reports.

REPORT OF THE SUB-COMMITTEE ON PRESERVATION OF GERM PLASM

At the 1961 meeting of the North Central Corn Breeding Research Committee it was decided that the sub-committee on the preservation of germ plasm should be continued for an additional year and charged with the task of obtaining a list of open pollinated varieties currently being maintained by the several experiment stations. The varieties are listed in table 1.

With regard to the storage of this material at the National Seed Storage Laboratory, Dr. Skrdla indicated last spring that it was planned to submit to the National Laboratory samples of all the introductions, including state collections, presently stored at the North Central Regional Plant Introduction Station. Early in January, 1962, Dr. Skrdla advised that nothing had been done on such a transfer as yet because tomatoes were first on the list. However, the tomato work has been completed and corn is to be next. Apparently Dr. Skrdla hopes to make the corn transfer this spring.

D. B. Shank, Chairman
E. J. Dollinger
J. H. Lonnquist

Table 1. Open-pollinated varieties of corn maintained by the various experiment stations on the North Central Region.

Plant Introduction Number	Variety	Location Submitting Station	Stored Ames
<u>INDIANA</u>			
None	Reid Yellow Dent *		
"	Ayler strain	yes	no
"	Sipes strain	"	"
"	Fountain County Golden Dent *	"	"
* Seed increased from small original samples.			
<u>IOWA</u>			
None	Reid Yellow Dent	Yes	No
"	Fort Dodge Yellow Dent	"	"
"	Butt's O.P.	"	"
"	Alph	"	"
"	Krug	"	"
"	Silver King	"	"
"	Golden King	"	"
"	Black's Yellow Dent	"	"
"	National Long Ear	"	"
"	Lancaster	"	"
"	Kolkmeier	"	"
<u>KANSAS</u>			
	<u>No.</u>	<u>Name</u>	
222609	CP 1	Original Midland	Yes Yes
222610	OP10	Reid type composite #3	" "
222611		Early White Composite #2	" "
222612		Late White Composite #6	" "
222613		Reid Yellow Dent	" "
222614	OP 2	Midland	" "
222615	OP 3	Midland	" "
222616	OP 6	Zahnley Yellow Dent	" "
222617	OP 7	Richards White	" "
222618	OP 8	Hays Golden	" "
222619	OP 9		" "
222620	OP11	Cassel White	" "
222621	OP12	Golden Republic	" "
222622	OP29	Mortgage Lifter Yellow	" "
222623	OP30	Montgomery Co. White	" "
222624	OP32	Montgomery Co. Blue and White	" "
222625	OP36	Woodson Co. Yellow	" "
222626	OP38	Crawford Co. White	" "
222627	OP39	St. Charles White	" "
222628	OP42	Brown Co. Yellow	" "
222629	OP43	Challender Blue and White	" "
222630	OP51	Bill Day Yellow	" "
222631	OP53	Labette Co. Yellow	" "
222632	OP54	Labette Co. Yellow	" "
222633	OP57	Labette Co. Yellow	" "
222634	OP75	Shawnee White (Muskcrush)	" "

Plant Introduction Number	Variety No.	Name	Location stored	
			Submitting Station	Ames
<u>Kansas, cont.</u>				
222635	OP80	Bowman's Cole Creek	Yes	Yes
222636	OP82	Allen Co. Yellow	"	"
222637	OP84	Crawford Co. Chief	"	"
222638	OP85	Neosho Co. White	"	"
222639	OP90	Pride of Saline	"	"
222640	OP92	Butler Co. White	"	"
222641	OP93	Butler Co. Yellow	"	"
222642	OP95	Kansas Sunflower	"	"
222643		Commercial White	"	"
222644		Early Yellow Composite #1	"	"
222645		Late Yellow Composite #1	"	"
222646		Blue and White Composite #5	"	"
222647		South American popcorn	"	"
222648		Supergold popcorn	"	"
222649	OP67	Improved South American Popcorn	"	"
<u>MICHIGAN</u>				
		<u>Name</u>		
222468		Nothstine variety	<i>2 yes</i>	Yes
222469		Golden Glow	"	"
222470		Pickett-Dickerson Strain	"	"
222471		MAC Variety	"	"
222472		Duncan variety (collected from Ernest York of Three River)	"	"
222473		Pickett Variety	"	"
222474		Polar Dent	"	"
222475		Yonderian	"	"
222476		Bussey	"	"
222477		Ranger	"	"
222478		Mathison	"	"
222479		Pratt	"	"
222480		Folks White Cap	"	"
222481		Pride of North	"	"
222482		Early Murdock	"	"
222483		Pickett Variety	"	"
222484		Ferden Yellow Dent	"	"
222485		Early Golden Glow	"	"
222486		Late Golden Glow	"	"
222487		Bethke	"	"
222488		Schmiege Strain of Flint	"	"
222489		Huron	"	"
222490		Smut Nose	"	"
222491		Improved Red Cob Fodder Corn	"	"
222492		White Cap Yellow Dent	"	"
222493		Golden Glow variety collected from Roscoe Carl & Son Seed Co.	"	"
222494		Pickett Strain collected from Roscoe Carl & Son Seed Co.	"	"
222495		Golden Glow collected from D. A. McPherson	"	"
222496		Unnamed variety collected from Mr. Able	"	"
222497		Unnamed variety collected from Allan	"	"
222498		Courser	"	"
222498		Unnamed variety; source unknown	"	"
2224083		Porritt variety	"	"

Plant Introduction Number	Variety	Location Stored	
		Submitting Station	Ames
<u>MINNESOTA</u>			
None	Murdock	Yes	No
"	Silver King	"	"
"	Golden Jewel	"	"
"	Golden King	"	"
"	Minnesota 13- (Morris strain)	"	"
"	Minnesota 13- U. Farm late	"	"
"	Minnesota 13- U. Farm early	"	"
"	Mellums strain of Haney's 13	"	"
"	Rustler	"	"
"	Norwestern Dent (extra early)	"	"
"	Norwestern Dent (late)	"	"

MISSOURI

221892	Ozark Mortgage Lifter	No	Yes
221893	Ozark Early Adams	"	"
221894	Ozark Yellow Silvermine	"	"
221895	Dill White Dent	"	"
221896	Osborn White Dent	"	"
233000	Gatepost	"	"
233001	White Dent	"	"
233002	Krug	"	"
233003	100 Day	"	"
233004	Midland (Showers)	"	"
233005	Indian Corn Mo. 1948 Misc. bulk	"	"
233006	Krug Yellow Dent	"	"
233007	Calico Corn	"	"
233008	Boone Co. White	"	"
233009	Reids (Missouri)	"	"
233010	Yellow Dent	"	"
233011	Haunschild White (Golden City)	"	"
233012	White Dent (Golden City)	"	"
233013	Ziler Yellow Dent (Golden City)	"	"
233330	Blythe Early South Africa	"	"
233331	Early Pearl "	"	"
233332	Golden Beauty "	"	"
233333	Jackson White Dent "	"	"
233335	Sahara "	"	"
233336	White Boesman "	"	"
233337	Woodgate "	"	"
236999	110 Day Yellow Cert.	"	"
237000	Midland	"	"
237001	Cassel's Open Pollinated	"	"
269741	Quitmans White Dent	"	"
269742	Rustler's White Dent	"	"
269743	Shoe Peg	"	"
269744	Perkins Yellow Dent	"	"
269745	Knapp White	"	"
269746	Commercial White	"	"
269747	90-Day White	"	"
221825	Potchefstroom Pearl South Africa	"	"
221827	Early King "	"	"
221828	Mixed success "	"	"
221835	American White Flint	"	"
221841	Teko Yellow	"	"

Plant Introduction Number	Variety	Submitting Station	Location Stored Ames
<u>Missouri Cont.</u>			
221842	Robyn	South Africa	No Yes
221845	Homedale	"	"
221851	Yellow Bossman	"	"
221853	Hotnot	"	"
221863	Improved Reids Yellow Dent	"	"
221864	Okla. Large So. Western Dent	"	"
221865	Gundy Special Yellow (white cob)	"	"
221866	Boone Co. White	"	"
221867	90-Day Yellow	"	"
221868	Iowa Silvermine	"	"
221869	Johnson Co. White	"	"
221870	Reid's Yellow Dent	"	"
221871	Delta Prolific White	"	"
221872	Neals Paymaster	"	"
221873	White Surecropper	"	"
221874	Ferguson Yellow Dent	"	"
221876	Jarvis Golden Prolific	"	"
221877	Midland	"	"
221878	Leaming	"	"
221879	St. Charles	"	"
221880	Midland	"	"
221881	St. Charles	"	"
221882	Reids	"	"
221883	Blattel White	"	"
221884	Pipe Corn	"	"
221885	White Dent	"	"
221886	Early Yellow Dent	"	"
221887	Iowa Gold mine	"	"
221888	Mo. Pipe Corn Meerchaum	"	"
221889	Mexican June	"	"
221890	Frerer Yellow Dent	"	"
221891	West Virginia Yellow Dent	"	"
269748	Ozark White	"	"
269749	Ladysmith's White Pearly	South Africa	"
269750	Natal White Horsetooth	"	"
269751	American White Flint	"	"
269752	Big St. Charles White	"	"
269753	St. Charles White	"	"
273474	McCormick White Dent (Alley Springs)	"	"
<u>NEBRASKA</u>			
222310	Cattle Corn	Yes	Yes
222311	Daves #2	"	"
222312	Early Composite of Western Nebr.	"	"
222313	varieties	"	"
222313	So. Central & So. West Comp. of nine varieties	"	"
222314	Reid (Barber Strain)	"	"
222315	Hays Golden	"	"
222316	Krug	"	"
222317	Reid (Nubold)	"	"
222318	Golden Republic	"	"
222319	Reid (Red Meadowbrook)	"	"
232666	Logan Co. Comp. of 5 varieties with better than average C.A. with (WF9.m14)	"	"
232667	Keith Co. Comp. of 2 varieties	"	"

Plant Introduction Number	Variety	Location Stored	
		Submitting Station	Ames
<u>OHIO</u>			
None	Leaming	Yes	No *
"	Lancaster Surecrop	"	"
"	Cook's Early Yellow Dent	"	"
"	Woodburn Yellow Dent	"	"
"	Sandy Lewis White (Cash White)	"	"
"	Eichelberger Clarage	"	"
"	Blue Clarage	"	"
"	Late Clarage	"	"
"	Wooster Clarage	"	"
"	Braun's 90-Day	"	"
"	Kantz Flint	"	"
"	Medina Pride	"	"
"	Reid Yellow Dent	"	"
"	Cash	"	"
"	Fosters (Scioto White or U.S. Sel.77)	"	"

* 1961 Crop seed is to be sent to Ames, Fall of 1961.

NORTH DAKOTA

213775	Rainbow (Great Plains)	Yes	Yes
213791	Rainbow (S. Dak.)	"	"
222286	Dakota Squaw	"	"
213790	Dakota White Flint	"	"
222288	Falconer	"	"
222293	Minn. 13 (Boyd)	"	"
222301	Rustler	"	"
222298	Pioneer	"	"
213794	Yellow Flour (Mandan)	"	"
213793	Assiniboine	"	"
222296	Orchard Baby	"	"
222283	Alta Gold (sweet)	"	"
222290	Golden Gem	"	"
222287	Wills Early June	"	"
213796	Nueta (sweet)	"	"
222304	Sunshine	"	"
222289	Golden Bantam	"	"
222303	Stowels Evergreen	"	"
222291	Jap. Hulless Pop Corn	"	"
222284	Carnival	"	"
222299	Red Star	"	"
222294	Minn. 13 (Haney)	"	"
213792	Gehu	"	"
222295	Northwestern	"	"
222302	Square Deal	"	"
222292	Minn. 13 (late)	"	"
222285	D12 Cudu, hand poll. blue speckled white flour	"	"
222300	D77 Rosebud blue, hand poll. blue flour	"	"
222297	D64 Peruvian Red, hand poll. red plant and seed, flour	"	"
222305	Bulk 1: White Flint (8 varieties) Argentine White, Mandan White, Russian early, Savendish, Turtle Mountain, Ural Mountain, White Squaw, Dakota White.	"	"

Plant		Location Stored	
Introduction		Submitting	
Number	Varieties	Station	Ames
<u>North Dakota Cont.</u>			
222306	Bulk 2: Yellow Flint (8 varieties) Alberta Flint, Gaspe, Gehu, Mandan Yellow, Siberian Earl, Russian Karpatian, Red Star, Mercer	Yes "	Yes "
222307	Bulk 3: Mixed Colored Flint (8 varieties) Assiniboine, Bear Island Chippewa, Hope Striped, Water Chief speckled, Santa Squaw, Rainbow, Fort Totten Striped.	"	"
222308	Bulk 4: White Flour (4 varieties) Ivory King, Cocahuazentte (Mexican) Pride of the Plains, Pima White	"	"
222309	Bulk 5: Colored flour (14 varieties) Mandan Black, Mandan Blue, Mandan Red (Clay), Mandan King, Mandan Red Ear, Papaga Red, Pima, Wichita Black, Navajo, Rosebud Blue, Zuni Blue, Winnibago Blue, Mandan Yellow, Peruvian Red.	"	"
269754	Bulk 6: Yellow Dent (5 varieties) Minn. 13 (Haney), Alta, Hoover, Idaho Mustoe, Square Deal.	"	"
269755	Bulk 7: White Dent (2 Varieties) Rustler, Pioneer	"	"
269756	Bulk 8: Yellow sweet (10 var.), Commando, Early Golden, Hubbard, Hubbard Bantam, Golden Gem, Golden Bantam, Mitchel, Early June, Sun- shine, Premonskaya.	"	"
269757	Bulk 9: Pure Tom Thumb Pop	"	"
269758	Bulk 10: Pure Jap Hulles Pop	"	"
<u>SOUTH DAKOTA</u>			
213777	Golden Jewel	Yes	Yes
213778	Gehu Flint	"	"
213779	Blue Flour	"	"
213780	Fulton Yellow Dent	"	"
213781	Falconer	"	"
213782	Brookings #86	"	"
213783	Brown County Yellow Dent	"	"
213784	Dakota White	"	"
213785	Black Hills Special	"	"
213786	Early Murdock	"	"
213787	Rainbow Flint	"	"
213788	Northwestern Dent	"	"
213789	Wimples Yellow Dent	"	"
---	Alta	"	No
---	Silver King	"	"
---	Minnesota 13	"	"
---	Blue Flour	"	"

Plant Introduction Number	Varieties	Location Stored	
		Submitting Station	Ames

WISCONSIN

None	Wisconsin No. 25 - Yellow Dent	Yes	No *
"	Minnesota No. 13 - Yellow Dent	"	" *
"	Golden Glow - Yellow Dent	"	" *
"	Silver King - White Dent	"	"

Composites maintained of yellow flint
Northwestern Dent; early, medium,
and late Dents.

- * Plans have been made to replenish these particular varieties the summer of 61 and then send them to Ames.

REPORT OF THE SUB-COMMITTEE ON GROUPING OF LINES FOR BREEDING
PURPOSES

No formal report was presented. It was pointed out that groupings of lines had been presented in earlier reports. Such listings should be continued but there seemed little point in presenting such lists more frequently than once every three years.

The committee was reminded of a survey made in 1956 on the extent of use of released station inbred lines by commercial seed companies. It was moved by Neal that the Secretary be instructed to contact the Hybrid Seed Corn Division of the American Seed Trade and explore the feasibility of conducting a new survey.

The motion was seconded by Leng and passed.

REPORT OF THE SUB-COMMITTEE ON CYTOPLASMIC MALE STERILITY AND
RESTORERS

A survey was conducted within the North Central Region and some adjacent cooperating Stations on progress made in programs for the incorporation of male-sterile cytoplasm and genetic fertility restoration into standard inbred lines. The results of this survey are presented in table 2. All cytoplasmic sterility involved the Texas source unless otherwise indicated under remarks.

J. B. Beckett, Chairman
J. H. Lonnquist
W. A. Russell

Table 2. Status of program for the incorporation of cytoplasmic male sterility and/or fertility restoring genes into existing inbred lines.

'Sterile version'		Fertility-restoring version			Source of	Remarks
'Inbred'	'generations	'backcrossed	'Generations	'Generations'		
selfed, if any						
Canada (Morden)						
ND203	6	5	nil		Ia 153	
ND255	7	5	"		"	
WD	7	5	"		"	
A116	7	5	"		"	
CM5	7	5	"		"	
V3	7	5	"		"	
CM2	4	2	"		"	
CM7	7	5	"		"	
CM17	5	4	"		"	
CM24	5	5	"		"	
CM25	5	5	"		"	
Canada (Ottawa)						
106	6+	3			A293R	
152	6	3			W153R	
190	6					
236	6					
303-1-1-2	6	3			A293R	
644-1-1	6					
644-2-1-2	6	3			A293R	
W79A	6	3			W153R	
A495	6					
170-1-2-2	6	3			A293R	
32	5					
W59E	5					
44-4-9-3	5					
7275-6-1	5					
46-43	5					
6124-56	5					
G176-8	5					
A158C105-5	5					
ML3-329-3-2	4					
WD	4					
A73C105-3	4					
A508	4					
204	4					
44-10-6-3-1	3					
CM5	3					
46-45	3					
7002-16-1-1	3					
6124-104-1	3					

Table 2. (cont'd.)

Inbred	Sterile version	Fertility-restoring version	Generations selfed, if any	Source of restoration	Remarks
Illinois					
K4	10+				
N6	8				
WF9	10+	6	1	K6,K55	
M14	9				Partial restorer
Ky21	8				Full restorer
CI.21E	9				
W23	6				
33-16	6				
38-11	10+				
Oh51A	9				
K55	9				Full restorer
K64	7				Partial restorer
C103	8				
I153	8				Full restorer
H245	7				Weak partial rest.
L317	8				
Hy2	10+	7	2	R138(K55)	
Tr	5				
R909	6				
R213	2				Genotype: $Rf_1 Rf_2$ $rf_1 rf_2$

(About 30 additional sources of male-sterile cytoplasm are available. Some have been backcrossed several times to most of the inbreds listed above.)

Indiana

WF9	5+			
H49	5+			
W64A	5+			
33-16	5+			
B14	5+			
M14		6	4	Ia 153
Tr		5	4	K6
Os420		5	4	Ia 153
Hy		6	4	"
Oh28		6	4	"

Table 2 (cont'd.)

Inbred	Sterile 'version'	Fertility-restoring version		Source of 'restora- 'tion'	Remarks
		'backcrossed'	'Generations selfed, if any'		

Indiana (cont'd.)

L317	5		4	K6	
H14	6		3	Ia 153	
Oh45	6		5	"	
L304A	5		5	"	
B14	5		3	Hy(Ia153)	Hy Rf developed with Ia 153 as original source
C103	5		5	Ia 153	
Oh43E	6		3	K6	
W64A	6		2	Oh45(Ia153)	
H42	5		3	ML4(Ia153)	
187-2	6		3	K6	
H55	6		3	Hy(Ia153)	
K41	6		3	K6	
K44	6		3	K6	
K61	6		4	K55	
A295	6			C103(Ia153)	
B37	6			Os420(Ia153)	
B38	6			Hy(Ia153)	
B9	6			Oh45 (Ia.153)	
N6	6			C103(Ia153)	
H56	6			Hy(Ia153)	
H59	6			C103(Ia153)	
H60	6			Os420(Ia153)	
CI.38B	3			B14(Ia153)	
H51	3			H55(Ia153)	
H52	3			Oh43(K6)	

Iowa

B6	6		4	Ky21	released
B7	6		4	Tx127	released
B8	6		3	Ky21	
B10	6		3	Tx127C	
B14	6		4	Ky21	

Table 2. (cont'd.)

Inbred	Sterile version generations backcrossed	Fertility-restoring version Generations backcrossed	Generations selfed, if any	Source of restora- tion	Remarks
Iowa (cont'd.)					
B14	7	6	4+	Tx127C	Released
B16		6	1	Tx127C	
B21		6	2	Ky21	
B37		6	4	Ky21	Released
B38		6	2	Ky21	
B42*		6	-	Ky21	
B45*		5	-	Ky21	
B46*		5	-	Ky21	
B50*		3	-	Ky21	
B51*		2	-	Ky21	
B53*		1	-	Ky21	
B54*		2	-	Ky21	
B55*		1	-	Ky21	
B56*		1	-	Ky21	
B57*		3	-	Ky21	
Oh07		6	3	Ky21	
Oh41		6	4	Tx127C	Released
Oh43	6+	6	4	Ky21	
Oh51A	6+	6	3	Ky21	
M14	6				Reid's sterile
M14	6+				S sterile
M14	6+				Vg sterile
M14		6	4	Ky21	Released
M14		6	3	Tx127C	
W22		6	2	Ky21	
Os420		6	3	Ky21	
C103		6	3	Tx127C	
N6		6	3	Ky21	
L317		6	4	Ky21	
38-11		6	3	Ky21	

* Transfer of restorer genes using Eckhardt's method

Table 2. (cont'd.)

	'Sterile ' version	Fertility-restoring version		'Generations 'backcrossed'	'Source of selfed, ' restor- ' ation	'Remarks
Inbred	'backcrossed'	'backcrossed'		if any		
Iowa (cont'd.)						
38-11		6		4	Tx127C	Released
187-2		6		4	Ky21	
187-2		6		4	Tx127C	
Hy		6		4	Ky21	
Hy		6		4+	Tx127C	Released
CI.31A*	6	3		-	Tx127C	
A257*		5			Tx127C	
WF9	10+					Texas sterile
WF9	6					Reid sterile

*Transfer of restorer genes using Eckhardt's method

Kentucky

White

Ky 27	7	5	3	Ky 21	
Ky 49	7	5	2	Ky 21	
Ky 201	6	5		Ky 21	
Ky 211	8				
Ky 217		5		Ky 21	
33-16	6	5	4	Ky 21	
CI.49B	6	5	3	Ky 21	
CI.64	5				
H21		5	3	Ky 21	
H28	7	6	1	K55	
H28	5				
K55	4	7	2		from Kansas
K64	4				from Kansas

Yellow

Ky 108		2		Ky 21	
Ky 120		2		Ky 21	
Ky 126		3		Ky 21	
Ky 36-11	7	5	2	Ky 21	
38-11	6	5	2	Ky 21	

Table 2. (cont'd.)

Table 2. (cont'd.)

Inbred	'Sterile ' version	Fertility-restoring version			Remarks
		'backcrossed'	'Generations 'generations	'Source of ' selfed, restora- tion	

Michigan (cont'd.)

MS89	3	3		Tx127C	
MS91	3	3		"	
MS100	3	3		"	
MS104	3	3		"	
MS111	3	3		"	
MS113	3	3		"	
MS86	2	2		"	
MS121	1	1		"	
MS92	1	1		"	
MS144	1	1		"	
MS145	1	1		"	
MS103	1	1		"	
MS55	1	1		"	
MS143	1	1		"	
MS133	1	1		"	
Oh41	1	1		"	
B14	2	2		"	
MS199	1	1		"	
MS201	1	1		"	
MS203	1	1		"	
MS215	1	1		"	
MS109	1	1		"	

Minnesota

V3	-	7	1	A344	A344, A293 con- tain restorer gene from Ia153
CMD5	10+	5	0	A293	
ND203	10+	7	1	A293	
A427	-	7	1	ND52	
A495	10+	6	0	A344	
A556	10+	7	1	A293	
MS1334	5	7	1	A293	
W33	10+	6	0	ND52	
W59M	2	7	1	ND52	
W103	10+	7	1	SD26	
A90	10+	7	1	ND52	
A502	-	7	1	SD26	
A509	-	7	1	ND52	

Table 2. (cont'd.)

Sterile Fertility-restoring version					
version		Generations		Source of	
generations		Generations		selfed, restoration	
Inbred	'backcrossed'	'backcrossed'	if any	'tion	Remarks
Minnesota (cont'd.)					
A417	10+	4	0	A344	
A619	2	-	-	-	
A554	2	-	-	-	
A340	8	-	-	-	
A90	-	-	-	-	
A116	10+	-	-	-	
A204	10+	-	-	-	
A218	10+	-	-	-	
A508	10+	-	-	-	
WD	10+	-	-	-	
A73	Released	6	2	A293	1962-Test with (Oh51A x Oh5) and W22
A239	-	6	-	A293	
A251	-	5	2	A293	
A264	Released	-	-	-	-
A286	"	5	2	A293	-
A295	"	5	2	A293	1962-Test with (B14 x A239) and W64A ^T
A297	-	6	2	A293	-
A334	Released	-	-	-	
A375	-	5	2	A293	To be discont.
A495	Released	-	-	-	-
A556	"	-	-	-	-
B9A	-	5	2	SD26, K55	-
Oh5	Released	-	-	-	-
Oh43	"	6	2	A293	To be discont.
Oh51A	"	6	2	A293	1962-Test with (A295 ^T x A286) and A375
W10	"	-	-	-	-
W22	"	6	2	A293	-

Table 2. (cont'd.)

Inbred	Sterile version	Fertility-restoring version generations	backcrossed	Generations selfed, if any	Source of restora- tion	Remarks

Missouri

B41	9	8			K6	
Mo10	9	9			R7	
CI.21E	7	3			A293	
CI.42A	7	7			A293	
38-11	9	5			-	
CI.38B	6	6			A293	
Mo3	8	3			A293	
K4	5	3			-	
B2	8	4			-	
Mo53682	7	6			A293	
CI.7	8	4			A293	
Oh7A	8	4			A293	
K148	8	6			-	
Ky27	8	4			K6	
Ky49	8	3			-	
Mo22	8	5			K6	
Mo1W	9	8			K6	
T111	7	6			K6	
Mo8W	7	7			Ky122	
Mo9W	8	3			K55	
H28	8	6			K6	

Nebraska

N6	6	6	2		1153	
N15	6	5	2		1153	
N9	3	3	0		1153	
N22	1	1			1153	
N22A	1	1			"	
N7	1	1			"	
N8	1	1			"	
N38	1	1			"	
N9A	1	1			"	

North Dakota

ND167	9	2	3		ND52	*
		1	0		Cl03 Rf	
		1	0		NY 16 Rf	

* Restoring version set aside in 1959.

Table 2. (cont'd.)

Inbred	'Sterile ' version	'Fertility-restoring version ' generations	'Generations ' selfed,	'Source of ' restora-	Remarks
North Dakota (cont'd.)					
ND203	9	2	5	ND52	*
		1	0	Cl03 Rf	
		1	0	NY 16 Rf	
ND211	9	2	3	Ial53	*
ND230	9	2	3	ND52	*
ND255	9	2	3	ND52	*
ND283	9	2	3	ND52	*
CV3	9	2	3	ND52	*
A90	9	1	6	ND52	Partial restorer. Restoring version is promising.
		1	6	Ial53	Part. rest. Rest. version is promis.
		1	6	ND211	" "
All1	9	1	3	ND52	*
Wml3	9	1	3	ND52,	*
				Ial53	*
B8	5	1	0	Ial53	
All6 (Morden)?+3					
WD (Minn.)? +3					
A508 (Minn.)? +3					
A556 (Minn.)? +3					
MS1334 (Mich)?+1					
MS1334 Rf (Mich)		?	?		
(Reid x Ial53)St. 7					Reid sterile cyto.
(Al58 x WF9)WF9 7					Al58 Sterile cyto.

* Restoring version set aside in 1959.

Ohio

Oh05	7	7	2	Ial53	
Oh7K	7	7	2	"	
Oh26D		7	2	"	
Oh26F		8	2	Woodburn O.P.	
Oh28		7	4	Ial53	
Oh33		7	2	Ial53	
Oh40B		7	2	"	
Oh41		7	3	Woodburn O.P.	
Oh42LH		7	2	"	
Oh43	5	9	2	Ial53	

Table 2. (cont'd.)

	Sterile version	Fertility-restoring version	Generations selfed, 'backcrossed' if any	Source of restora- tion	Remarks
Ohio (cont'd.)					
Oh45		7	3	Woodburn O.P.	
Oh51A	7	7	4	Ial53	
Oh56A		7	2	Ial53	
Oh3267		7	2	Ial53	
W22		8	2	Ial53	
CI.38A	7	7	2	Woodburn O.P.	
A375		7	2	Ial53	
Fy		7	5		from A.M.Brunson
L317		7	5	Woodburn O.P.	
Oh45A		7	2	"	
Pa.32		7	1	Ial53	
Pa.11		7	1	Ial53	
Pa.B8A		7	1	Ial53	
W182-D		7	1	Ial53	
W64A		7	1	Ial53	
Oh07		7	1	Ial53	
CI.187-2		7	1	Ial53	
Oh7R		7	1	Ial53	
Oh32		8	1		Direct source HyRf
Oh7L		7	1	Woodburn O.P.	
Oh7G		7	1	Woodburn O.P.	
CI03	6	7	1	"	
OhTh.		8		Cash O.P.	
Oh45B		7		Ial53	
Oh45C		7		Ial53	
W22R		7		Ial53	
Oh7P		6		Ial53	
R181		6		Ial53	
Oh02		6		Ial53	
H73		2		Ial53	
H55		2			Direct source HyRf

Table 2. (cont'd.)

	'Sterile ' version	'Fertility-restoring version 'Generations'	'Source of ' generations'	'Generations' selfed,	'restora- tion	Remarks
Inbred	'backcrossed'	'backcrossed'		if any		
Ohio (cont'd.)						
Oh501		2			Ia153	
Oh502		2			"	
Oh503		2			"	
A619		2			"	
Oh26	7+					May leak
Oh3C	4					
Oh57	7					
Oh7N	8					
Oh45A	6					
Oklahoma						
Ok22	8					
Ok15	9					
Ok11R		7			Golden June OP	
Ok19		7			" "	
South Dakota						
SD5	7	7	1		SD26	
SD7	7	7	1		"	
SD48	7	7	1		Il53	
SD17	8	8	1		SD26	
B8	7	7	1		Il53	
Oh56A	7	7	1		SD26	
W103	5	5	0		Il53	
W59M	3	3	0		Il53	
A509	5	5	0		Il53	
Oh43	4	4	0		SD26	
Os420	6	6	0		SD26	
(Madison) Wisconsin						
W-R3	8	5	3		K55	
W-9	8	4	3		W153R	
W-M13R	7	3	3		W153R	
ML4	-	3	7		Tx127	
ML4	-	3	7		K55	

Table 2. (cont'd.)

Inbred	Sterile 'version'	Fertility-restoring version			Remarks
		'generations' 'backcrossed'	'Generations' 'selfed, if any'	'Source of' 'restora- 'tion'	
		(Madison)	Wisconsin (cont'd.)		
W22R	6	4	3	K6	
"		5	3	K55	
W23	6	2	3	"	
W32	8	5	2	"	
"		3	7	Tx127	
W37A		5	3	K55	
"		5	2	Tx127	
W-Oh43	6	5	3	K55	
"		5	3	T127	
W-Oh45	8	4	2	K55	
"		4	2	Tx127	
W-Oh51A		6	5	W153R	
W64A	7	4	3	Ky21	
"		4	3	K55	
"		5	3	Tx127	
W-C103	4	4	3	Ky21	
W-153R	-	4	2	W153R	M.S.background
W-182B	6	3	1	Ky21	
"		4	3	K55	
W-182D	8	3	3	K-6	
"		4	3	K55	
W-A374B	7	3	3	Ky21	
"		5	2	K55	
WF9	10	-	-	-	
B14	3				
Hy	7				
A277	6	Bx1	3	K55	
Spomer, Wisconsin					
W59M	6				
W79A	4				
W375B	2				
W489	4				
W627	4				
W537	4				
W117	4				
W401	4				
W182B(Sp)	4				

REPORT OF THE SUB-COMMITTEE ON MEETING PLACE

Chairman Crase requested an expression of opinion on the suitability of facilities at the Hamilton Hotel. It was the consensus that facilities were adequate. It was MOVED by Lomquist "That the sub-committee make arrangements with the Hamilton Hotel for the 1963 meeting to be held March 6 and 7. The motion was seconded by Bauman and carried.

REPORT OF THE SUB-COMMITTEE ON STALK ROT

This committee, in 1961, proposed a plan for a cooperative stalk rot and lodging study. Data from 66 tests were obtained. These are summarized in tables that follow. The "difference necessary for significance" figures appearing at the bottom of various tables have been computed by Duncan's Multiple Range test. The difference necessary for significance at the 5 percent level, in comparing any two or more strains, can be found by listing the strains in order of their performance for the character being considered and counting the number of strains being compared plus the number falling between them on this ranking. This total will be the "number in range" and the corresponding "difference necessary for significance" can be read from the table.

Workers Submitting Data and Comments Regarding the Tests

Manitoba, Canada (Winnipeg). S. B. Helgason. Season dry, unfavorable for disease; inoculations with Gibberella.

Manitoba, Canada (Morden). John Giesbrecht. Season dry, uneven germination, ears from late germinating plants discarded, data fairly good; inoculations with Gibberella.

Illinois (Urbana). A. L. Hooker. Season generally good, conditions very favorable for stalk rot; inoculations with Diplodia; data believed to be good.

Indiana (Lafayette). L. F. Bauman and A. J. Ullstrup. Good season with above average natural occurrence of stalk rot; inoculations with Diplodia.

Iowa (Ames). W. A. Russell and D. C. Foley. Excellent growing conditions; inoculations with Diplodia.

Kentucky (Lexington). F. A. Loeffel.

Michigan (East Lansing). E. C. Rossman. Season ideal for plant growth and development, weather conditions ideal for stalk rot development; inoculations with a mixture of Diplodia and Gibberella.

Minnesota (Rosemount). R. D. Wilcoxson. Inoculations with *Diplodia* and *Gibberella* in separate tests.

Missouri (Huntsdale, yield tests; Columbia, disease tests). M. S. Zuber and O. H. Calvert. Very good season, data for disease tests of inbreds not considered good because of flooding and plant stunting; inoculations with *Diplodia*.

Nebraska (Wood River). J. H. Lonnquist and J. L. Weihing. Heavy rainstorm prior to emergence resulted in stand reductions; inbreds RL09B and KL59 contributed excellent resistance to stalk rot.

North Carolina (Raleigh). D. L. Thompson. Moisture adequate, data may not be reliable; inoculations with *Diplodia*.

North Dakota (Fargo). Wm. Wiidakas. Planting delayed because of rain, dry periods in June and August, very good growing conditions in July, drought in August resulted in very poor growth and ear development, rain and windstorms on September 10 and 13 caused extensive lodging and plant breakage, stalk rot extensive in strains with high lodging.

Ohio (Wooster, 5-600 maturity; Columbus, 7-800 maturity). E. J. Dollinger and W. R. Findley. Inoculations with *Diplodia*.

South Dakota (Brookings). C. M. Nagel. Made disease test of 2-300 maturity inbreds and hybrids in one experiment, did not follow planting plan, rainfall above normal, made inoculations with *Diplodia* and *Gibberella* in separate tests, used Horsfall-Barrett system of recording rot ratings, concluded that there were differences between organisms but not much difference between corn lines.

Virginia (Holland, yield tests; Blacksburg, disease tests). C. F. Genter, M. W. Alexander, C. W. Roane. Stalk rot ratings in yield tests made too late in the season and ratings in disease tests made too soon after inoculation, cool weather at Blacksburg; made inoculations with *Diplodia*.

Wisconsin (Madison). P. E. Hoppe. Made inoculations with *Diplodia*, in addition to stalk rot ratings requested took cortical readings, believes the latter ratings are the more reliable index of disease reaction.

A. L. Hooker, Chairman
Paul Hoppe
M. S. Zuber

Sub-committee Chairman Hooker MOVED for the acceptance of the report and request that time be made available Thursday morning for a discussion of future plans. The motion for acceptance was seconded by Beckett. Motion carried.

Table 3. Summary of performance of 100 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS		DISEASE TESTS	
	Mid-silk da. (1)	Stalk lodg. % (2)	Mid-silk da. (3)	Stalk rot rating (4)
V3	65	12.58	71	3.47
ND203	66	9.52	70	3.15
WD	66	8.14	69	3.02
SD48	68	14.28	77	4.02
ND230	64	6.38	69	2.42
CMD5	66	18.14	71	2.30
W15	67	5.22	69	2.32
W103	64	16.44	69	2.45
ND283	67	9.16	74	2.54
Strain df	-	8	-	8
Strain MS	-	121.66**	-	3.25**
Strain x Loc. df	-	8	-	16
Strain x Loc. MS	-	279.15**	-	1.31**
Error df	-	32	-	48
Error MS	-	51.93	-	0.29

(1) Manitoba, Canada (Winnipeg), Mich., N. Dak.

(2) Mich., N. Dak.

(3) and (4) Manitoba, Canada (Winnipeg), Manitoba, Canada (Morden), Mich.

Table 4. Summary of performance of 100 maturity single crosses in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS	
	Mid-silk da. (1)	Stalk rot % (2)	Stalk lodg. % (3)	Acre yield bu. (4)	Mid-silk da. (5)	Stalk rot rating (6)
V3 x ND203	63	31.6	22.31	49.0	65	3.28
V3 x WD	62	22.9	16.40	52.3	65	3.25
V3 x SD48	62	27.9	19.77	50.0	64	2.62
V3 x ND230	63	19.7	21.21	52.9	66	2.63
V3 x CMD5	63	29.5	18.16	49.5	67	3.00
V3 x W15	64	25.4	7.06	53.2	65	2.80
V3 x W103	62	16.4	16.71	54.1	65	3.13
V3 x ND283	64	29.2	23.20	52.6	67	3.13
ND203 x WD	64	35.6	9.97	49.6	67	3.26
ND203 x SD48	64	32.3	15.13	48.7	65	2.96
ND203 x ND230	64	20.5	37.08	45.8	67	3.36
ND203 x CMD5	63	40.8	15.44	48.2	66	2.74
ND203 x W15	64	41.7	16.63	44.9	67	2.59
ND203 x W103	64	41.7	15.08	54.0	67	3.12
ND203 x ND283	64	27.2	27.26	43.8	67	2.30
WD x SD48	65	26.1	13.19	41.1	68	3.06
WD x ND230	65	19.2	17.72	45.3	67	2.70
WD x CMD5	65	28.0	14.53	55.6	68	3.32
WD x W15	64	27.4	25.16	54.7	67	3.59
WD x W103	64	30.7	17.54	57.0	68	3.51
WD x ND283	64	30.6	24.17	46.7	66	3.23
SD48 x ND230	62	24.0	18.87	54.8	65	3.88
SD48 x CMD5	63	41.3	17.30	53.0	66	2.91
SD48 x W15	65	30.2	17.14	58.0	67	3.17
SD48 x W103	64	36.3	29.03	48.9	66	2.79
SD48 x ND283	63	44.6	27.30	49.6	66	3.06
ND230 x CMD5	63	25.9	16.97	51.4	65	3.10
ND230 x W15	64	31.8	8.22	48.6	67	3.16
ND230 x W103	65	27.8	24.78	49.9	67	3.15
ND230 x ND283	64	32.3	18.60	51.2	66	2.69

Table 4. Continued

CMD5 x W15	66	17.9	18.81	51.0	68	3.24
CMD5 x W103	64	15.9	27.47	52.0	67	2.55
CMD5 x ND283	65	21.5	11.38	52.2	68	3.03
W15 x W103	64	23.5	8.83	45.0	68	3.14
W15 x ND283	64	27.4	8.43	52.8	67	2.65
W103 x ND283	65	12.2	13.66	50.8	68	3.33
Strain df	--	35	35	--	--	35
Strain MS	--	185.45	382.86**	--	--	0.97**
Strain x Loc. df	--	--	70	--	--	70
Strain x Loc. MS	--	--	407.52**	--	--	0.68**
Error df	--	70	210	--	--	210
Error MS	--	202.46	191.29	--	--	0.32

(1) Manitoba, Canada (Winnipeg), Manitoba, Canada (Morden), Mich., N. Dak.

(2) Manitoba, Canada (Morden).

(3) Manitoba, Canada (Morden), Mich., N. Dak.

(4) Manitoba, Canada (Winnipeg), Manitoba, Canada (Morden), Mich., N. Dak.

(5) and (6) Manitoba, Canada (Winnipeg), Manitoba, Canada (Morden), Mich.

Table 5. Summary of performance of 200-300 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS		DISEASE TESTS	
	Mid-silk da. (1)	Stalk lodging. % (2)	Mid-silk da. (3)	Stalk rot rating (4)
W37A	72	9.32	78	4.12
W357	67	3.35	76	2.00
A90	72	2.15	81	4.18
CH9	72	5.15	81	1.74
W153R	68	4.16	78	3.52
W33	68	12.52	76	4.64
W79A	68	5.66	78	3.64
A498	68	10.92	76	4.66
Strain df	-	7	-	7
Strain MS	-	85.91	-	7.53**
Strain x Loc. df	-	7	-	7
Strain x Loc. MS	-	220.75**	-	3.26**
Error df	-	28	-	28
Error MS	-	60.23	-	0.32

(1) and (2) Mich., N. Dak.

(3) Mich.

(4) Mich., Wls. (Madison)

Table 6. Summary of performance of 200-300 maturity single crosses in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS			DISEASE TESTS	
	Mid-silk da. (1)	Stalk lodg. % (2)	Acre yield bu. (3)	Mid-silk da. (4)	Stalk rot rating (5)
W37A x W357	66	19.18	88.5	72	3.26
W37A x A90	66	10.50	73.4	75	3.35
W37A x CH9	66	15.02	89.6	73	3.25
W37A x W153R	66	35.00	87.2	72	3.12
W37A x W33	63	18.42	73.4	71	3.64
W37A x W79A	65	30.02	75.8	71	4.75
W37A x A498	65	22.08	85.2	74	3.64
W357 x A90	68	30.98	82.6	73	2.41
W357 x CH9	64	10.84	85.6	72	2.29
W357 x W153R	64	15.40	79.8	71	3.24
W357 x W33	65	24.30	76.6	71	3.14
W357 x W79A	66	22.10	78.4	69	3.61
W357 x A498	66	17.00	66.7	71	3.22
A90 x CH9	63	27.06	90.6	73	2.28
A90 x W153R	66	37.06	79.8	71	2.97
A90 x W33	66	18.35	72.0	71	3.26
A90 x W79A	64	20.98	66.0	69	4.20
A90 x A498	66	27.06	71.6	72	2.81
CH9 x W153R	66	16.28	94.0	72	2.76
CH9 x W33	66	16.25	78.6	72	3.05
CH9 x W79A	64	34.18	78.0	70	4.19
CH9 x A498	66	38.75	77.6	72	3.12
W153R x W33	66	27.52	80.5	69	3.35
W153R x W79A	66	28.88	79.4	70	3.98
W153R x A498	66	15.42	71.2	70	3.47
W33 x W79A	66	22.52	67.9	71	4.50
W33 x A498	65	11.26	74.6	69	4.03
W79A x A498	66	9.16	66.0	70	4.31
Strain df	-	27	-	-	27
Strain MS	-	422.66**	-	-	2.42**

Table 6. Continued

Strain x Loc. df	-	54	-	-	27
Strain x Loc. MS	-	196.17**	-	-	0.86**
Error df	-	162	-	-	108
Error MS	-	75.22	-	-	0.29

(1), (2), and (3) Mich., N. Dak.

(4) Mich.

(5) Mich., Wis. (Madison).

Table 7. Summary of performance of 500-600 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS			DISEASE TESTS	
	Mid-silk da (1)	Stalk rot % (2)	Stalk lodg. % (3)	Mid-silk da (4)	Stalk rot rating (5)
W22	82	6.90	5.10	83	1.81
WF9	84	0.00	1.60	82	2.90
B8	73	77.70	8.30	75	3.55
Oh43E	79	46.20	0.80	79	3.38
MS129	84	5.50	0.00	84	3.59
W187R	84	63.70	0.80	84	3.09
W23	79	94.50	13.30	79	3.90
L289	82	100.00	12.50	82	3.85
Oh28	84	93.70	1.70	84	3.80
Strain df	-	8	8	-	8
Strain MS	-	5079.89**	82.18	-	7.90**
Strain x Loc. df	-	-	-	-	40
Strain x Loc. MS	-	-	-	-	1.37**
Error df	-	16	16	-	96
Error MS	-	191.91	39.53	-	0.15

(1) Ind., Mich.

(2) Ind.

(3) Mich.

(4) Ill., Ind., Mich., Ohio

(5) Ill., Ind., Mich., Minn. (Diplodia), Minn. (Gibberella), Ohio

Table 8. Summary of performance of 500-600 maturity single crosses in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS	
	Mid-silk da. (1)	Stalk rot (2)	Stalk lodg. (3)	Acre yield bu. (4)	Mid-silk da. (5)	Stalk rot rating (6)
W22 x WF9	77	47.6	4.34	104.0	76	2.32
W22 x B8	75	68.1	22.37	91.8	74	2.59
W22 x Oh43E	77	46.5	4.77	96.7	76	2.29
W22 x MS129	80	61.2	7.24	104.7	79	2.68
W22 x W187R	80	66.7	7.17	103.0	79	2.30
W22 x W23	78	63.3	18.13	96.0	76	3.42
W22 x L289	78	76.6	33.11	106.0	76	2.52
W22 x Oh28	81	46.2	12.35	108.6	80	2.86
WF9 x B8	75	33.5	8.15	95.6	74	2.91
WF9 x Oh43E	76	29.0	2.51	109.6	75	2.44
WF9 x MS129	78	47.1	18.63	97.1	78	2.91
WF9 x W187R	80	68.2	20.35	100.5	78	2.45
WF9 x W23	76	64.5	11.22	95.3	75	3.10
WF9 x L289	79	49.0	16.69	105.8	76	2.32
WF9 x Oh28	79	42.5	6.74	101.6	78	3.06
B8 x Oh43E	74	52.0	11.03	93.6	72	2.77
B8 x MS129	75	37.3	20.30	92.9	74	3.19
B8 x W187R	77	81.0	36.56	99.5	76	2.62
B8 x W23	74	52.9	37.49	79.6	73	3.54
B8 x L289	75	84.4	51.14	86.2	72	3.35
B8 x Oh28	77	29.2	20.26	79.8	74	3.41
Oh43E x MS129	79	27.3	6.77	103.1	78	2.46
Oh43E x W187R	78	74.0	13.71	111.5	76	2.75
Oh43E x W23	76	66.5	31.73	92.1	74	3.56
Oh43E x L289	78	32.0	11.93	103.3	75	2.44
Oh43E x Oh28	79	42.9	8.09	103.7	77	3.01
MS129 x W187R	82	47.1	25.43	108.6	80	2.93
MS129 x W23	78	37.9	16.22	87.7	76	3.61
MS129 x L289	81	45.5	34.62	99.9	78	2.67
MS129 x Oh28	82	65.5	19.90	99.6	80	3.45
W187R x W23	78	75.8	45.71	91.2	75	3.55
W187R x L289	80	74.1	40.23	93.0	78	2.80
W187R x Oh28	83	64.0	29.43	96.6	80	2.91

Table 8. Continued

W23 x L289	77	50.0	40.84	94.1	74	3.32
W23 x Oh28	79	69.2	38.21	89.4	76	3.65
L289 x Oh28	81	68.2	35.37	94.3	78	3.23
Strain df	-	35	35	-	-	35
Strain MS	-	775.53**	1619.75**	-	-	3.33**
Strain x Loc. df	-	-	70	-	-	175
Strain x Loc. MS	-	-	440.70**	-	-	0.79**
Error df	-	70	210	-	-	420
Error MS	-	373.31	148.95	-	-	0.22

(1) Ind., Mich., Ohio

(2) Ohio

(3) and (4) Ind., Mich., Ohio

(5) Ill., Ind., Mich., Ohio

(6) Ill., Ind., Mich., Minn. (Diplodia), Minn. (Gibberella), Ohio

Table 9. Summary of performance of 700-800 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS			DISEASE TESTS	
	Mid-silk da (1)	Stalk rot % (2)	Stalk lodg. % (3)	Mid-silk da (4)	Stalk rot rating (5)
B41	82	26.66	7.37	81	3.11
B14	83	52.06	10.70	82	3.29
C103	83	25.73	14.54	82	2.95
K757	77	56.16	20.92	76	4.09
R109B	82	32.77	17.42	81	3.21
38-11	85	26.62	18.05	84	3.42
Mo940	84	48.88	40.45	83	4.01
Os420	83	77.50	24.24	82	4.36
H55	83	44.49	23.29	82	3.06
K159	85	32.77	20.72	84	3.06
Strain df		9	9	--	9
Strain MS		4201.43**	1468.09**	--	5.40**
Strain x Loc. df	--	36	45	--	54
Strain x Loc. MS	--	2394.51**	731.13**	--	1.84**
Error df	--	90	108	--	126
Error MS	--	188.51	213.79	--	0.88

- (1) Ill., Ind., Ky., Mo., Va.
- (2) Ill., Ind., Ia., Mo., Nebr.
- (3) Ill., Ia., Ky., Mo., Nebr., Va.
- (4) Ill., Ind., Mo., N. Car., Ohio, Va.
- (5) Ill., Ind., Ia., Mo., N. Car., Ohio, Va.

Table 10. Summary of performance of 700-800 maturity single crosses in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS	
	Mid-silk da. (1)	Stalk rot % (2)	Stalk lodg. % (3)	Acre yield bu. (4)	Mid-silk da. (5)	Stalk rot rating (6)
B41 x B14	74	34.08	5.33	110.8	76	2.09
B41 x C103	76	40.87	13.68	124.9	75	2.15
B41 x K757	74	38.62	20.90	97.6	75	2.49
B41 x R109B	74	23.53	6.39	109.6	74	2.53
B41 x 38-11	74	45.80	25.52	120.5	76	2.47
B41 x Mo940	76	69.34	45.38	119.7	77	2.34
B41 x Os420	73	68.58	28.33	102.2	73	3.35
B41 x H55	76	46.18	19.50	126.9	76	2.22
B41 x K159	75	26.92	11.77	100.3	75	2.45
B14 x C103	76	28.92	1.74	118.3	76	1.73
B14 x K757	74	24.08	5.58	75.6	74	2.62
B14 x R109B	75	19.88	4.05	98.6	76	2.84
B14 x 38-11	76	66.42	24.45	103.4	77	2.72
R14 x Mo940	76	54.95	31.46	113.7	77	2.84
R14 x Os420	73	63.03	19.44	105.0	74	2.94
R14 x H55	76	16.77	12.03	107.6	76	2.39
R14 x K159	74	28.41	8.89	93.4	77	2.93
C103 x K757	75	76.53	32.16	102.7	75	2.70
C103 x R109B	74	20.50	10.30	118.2	74	2.32
C103 x 38-11	77	53.89	23.34	111.8	78	2.35
C103 x Mo940	77	61.86	48.04	106.7	76	2.28
C103 x Os420	75	82.44	29.89	103.5	74	3.34
C103 x H55	77	41.23	20.61	121.7	77	1.98
C103 x K159	76	20.25	16.10	104.5	76	2.06
K757 x R109B	75	26.13	16.70	71.8	75	2.74
K757 x 38-11	74	76.52	46.30	107.0	75	3.26
K757 x Mo940	76	70.35	63.68	101.6	77	3.01
K757 x Os420	74	77.82	33.16	72.8	73	3.22
K757 x H55	75	50.90	33.74	96.4	75	2.56
K757 x K159 ^{a/}	75	25.40	20.96	85.7	77	2.33
R109B x 38-11	74	51.04	25.39	107.0	75	3.00
R109B x Mo940	78	49.22	37.40	98.8	77	3.03

Table 10. Continued.

R109B x Os420	72	42.72	20.07	100.0	72	3.49
R109B x H55	76	13.28	19.07	98.1	76	2.58
R109B x K159 ^{a/}	74	7.32	10.60	97.7	77	2.57
38-11 x Mo940	78	64.88	52.40	96.0	78	3.28
38-11 x Os420	76	79.22	39.27	98.4	77	3.16
38-11 x H55	77	65.40	43.70	118.3	77	2.62
38-11 x K159	75	23.00	21.50	105.8	77	2.56
Mo940 x Os420	75	85.97	67.02	90.8	75	3.34
Mo940 x H55	77	56.07	56.23	108.1	77	2.54
Mo940 x K159	76	30.77	48.42	95.8	77	2.51
Os420 x H55	74	74.18	43.65	105.8	74	3.23
Os420 x K159	74	48.63	24.66	103.2	74	3.15
H55 x K159	75	18.02	24.94	112.0	76	2.34
Strain df	--	44	44	--	--	44
Strain MS	--	5814.66**	5615.35**	--	--	7.81**
Strain x Loc. df	--	132	264	--	--	264
Strain x Loc. MS	--	954.35**	554.76**	--	--	0.51**
Error df	--	352	612	--	--	616
Error MS	--	331.10	193.79	--	--	0.36

- (1) Ill., Ind., Ky., Va.
 (2) Ill., Ia., Mo., Nebr.
 (3) Ill., Ind., Ia., Ky., Mo., Nebr., Va.
 (4) Ill., Ind., Ky., Mo., Nebr., Va.
 (5) Ill., Ind., Mo., N. Car., Ohio, Va.
 (6) Ill., Ind., Ia., Mo., N. Car., Ohio, Va.
^{a/} Not included in Ind. tests.

Table 12. Performance of 100 maturity hybrids in cooperative stalk lodging and stalk rot tests, 1961.

Strain	Yield Tests										Disease Tests									
	Mid-silk (da)					S. rot (%)					Lodging (%)					Mid-silk (da)				
	Mich.	N.D.	W.	Man.	M.	Mich.	N.D.	W.	Man.	M.	Mich.	N.D.	W.	Man.	M.	Mich.	N.D.	W.	Man.	M.
V3 x ND203	65	54	65	68	68	54.2	50.5	51.0	40.1	31.6	17.8	28.3	20.8	66	64	66	3.0	4.0	2.8	
V3 x WD	64	51	62	69	65.7	60.5	60.5	50.0	33.1	22.9	22.5	26.7	0.0	65	63	67	3.0	4.1	2.6	
V3 x SD48	65	54	63	68	51.1	56.8	51.1	51.1	41.2	27.9	29.6	23.3	6.4	65	64	63	2.6	2.9	2.3	
V3 x ND230	66	52	65	70	59.9	64.2	44.0	44.0	43.4	19.7	13.6	50.0	0.0	68	65	66	2.8	3.4	1.7	
V3 x CHD5	67	52	66	68	54.8	52.2	45.3	45.3	45.8	29.5	14.2	40.3	0.0	69	65	68	2.4	4.0	2.6	
V3 x W15	66	55	66	71	65.7	50.8	50.7	50.7	45.4	25.4	6.9	10.0	4.3	67	63	66	2.0	4.1	2.3	
V3 x W103	65	52	64	68	64.7	56.7	51.9	51.9	43.0	16.4	15.8	26.7	7.6	68	61	67	2.8	3.7	2.9	
V3 x ND283	67	52	67	69	78.2	51.1	42.4	42.4	38.9	29.2	13.7	26.7	29.2	69	65	67	3.2	4.0	2.2	
ND203 x WD	67	53	68	69	41.5	55.4	39.8	39.8	61.8	35.6	14.4	13.0	2.5	68	65	67	3.7	3.5	2.6	
ND203 x SD48	66	54	66	70	38.2	68.4	40.2	40.2	48.0	32.3	17.3	16.7	11.4	66	64	66	2.9	3.7	2.3	
ND203 x ND230	67	52	66	70	43.6	68.9	35.5	35.5	35.4	20.5	14.8	60.0	36.4	68	66	67	3.8	3.9	2.5	
ND203 x CHD5	65	52	66	69	37.1	55.0	44.4	44.4	56.3	40.8	12.7	20.0	13.6	68	64	67	3.1	2.6	2.5	
ND203 x W15	68	54	66	70	33.6	60.1	41.1	41.1	44.7	41.7	20.0	23.3	6.6	68	67	66	2.9	2.3	2.6	
ND203 x W103	68	55	66	69	52.3	58.0	41.6	41.6	64.2	41.7	5.8	15.0	24.4	69	66	67	2.0	4.0	3.4	
ND203 x ND283	68	52	67	68	39.9	53.8	41.0	41.0	40.6	27.2	23.8	33.3	24.7	68	66	67	1.6	3.1	2.2	
WD x SD48	67	58	67	69	30.2	56.0	36.3	36.3	41.9	26.1	19.2	8.3	12.1	68	66	69	2.5	3.7	3.0	
WD x ND230	67	54	68	70	42.5	58.0	37.1	37.1	43.5	19.2	13.4	25.0	14.8	68	67	67	2.8	2.8	2.5	
WD x CHD5	68	55	68	69	75.9	64.2	38.1	38.1	44.1	28.0	15.0	21.7	6.9	70	68	67	3.2	3.7	3.0	
WD x W15	69	52	68	68	63.9	58.6	48.4	48.4	47.9	27.4	5.5	56.7	13.3	69	66	66	3.9	4.0	2.9	
WD x W103	68	54	67	69	74.6	64.5	43.1	43.1	45.7	30.7	3.3	30.0	19.3	70	66	67	3.8	4.0	2.7	
WD x ND283	65	53	67	69	33.3	69.6	40.1	40.1	43.9	30.6	6.8	60.0	5.7	65	66	66	2.9	3.9	2.9	
SD48 x ND230	64	51	65	68	66.1	52.9	52.0	52.0	48.4	24.0	10.0	28.3	18.3	65	63	68	3.8	5.4	2.4	
SD48 x CHD5	65	54	66	68	46.5	60.3	55.6	55.6	49.7	41.3	12.5	21.7	17.7	66	65	67	2.6	4.0	2.1	

Table 12. (cont'd.)

Strain	Yield Tests				S. rot (%)				Longing (%)				Disease Tests							
	Mid-silk (da)		Yield (bu)		M.		M.		M.		M.		Mid-silk (da)		M.		M.		M.	
	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.
SD48 x W15	67	58	62.8	59.9	52.6	56.8	30.2	6.0	26.7	18.7	68	65	67	2.8	4.1	2.6				
SD48 x W103	65	53	44.4	63.3	44.9	42.9	36.3	5.0	36.7	45.4	67	65	66	2.7	3.9	1.8				
SD48 x ND283	65	53	47.3	57.5	44.6	48.8	44.6	2.5	60.0	19.4	67	64	67	3.1	4.0	2.1				
ND230 x QND5	65	53	43.5	60.9	41.3	59.9	25.9	11.8	33.3	5.8	65	64	66	3.9	3.6	1.8				
ND230 x W15	68	54	39.7	59.5	46.8	48.4	31.8	2.8	13.3	8.6	69	65	66	3.4	4.0	2.1				
ND230 x W103	68	56	40.1	59.6	52.3	47.7	27.8	7.8	51.7	14.8	69	64	67	3.6	3.3	2.6				
ND230 x ND283	67	54	39.9	61.9	49.1	48.1	32.3	10.0	46.7	2.1	69	64	66	2.5	3.2	2.3				
QND5 x W15	69	57	57.4	67.9	42.5	56.4	17.9	5.0	56.7	20.7	69	67	66	3.7	3.1	2.9				
QND5 x W103	68	53	52.8	69.7	50.6	55.1	15.9	4.2	30.0	0.0	69	66	66	2.4	3.2	2.0				
QND5 x ND283	71	53	53.0	63.7	43.6	48.7	21.5	5.0	8.3	16.5	69	65	67	3.0	3.7	2.4				
W15 x W103	68	53	33.2	53.9	52.4	40.3	23.5	5.0	11.7	5.5	69	65	66	2.5	3.7	1.8				
W15 x ND283	69	52	56.5	52.8	52.0	50.0	27.4	11.1	15.5	21.7	70	68	66	3.4	4.1	2.5				
W103 x ND283	71	53	55.5	62.0	40.3	45.4	12.2													
Strain NS(341r)	9.61**	8.41**	5.64**	1.67	498.25**	91.42**	910.42**	158.18	185.45	124.69	741.14	332.09	7.77**	6.20**	3.11	0.93	0.90	0.49		
Error NS(7041r)	1.54	0.57	0.74	1.86	23.43	18.83	278.32	125.03	202.46	59.07	87.35	427.45	1.56	0.93	3.60	0.38	0.28	0.32		
No. in range	Difference necessary for significance				Difference necessary for significance				Difference necessary for significance				Difference necessary for significance				Difference necessary for significance			
2			7.91	7.09	27.26	-					1.00	0.86	--	--	12.56	15.27	--	--		
3-5			8.78	7.87	30.24	-					1.12	0.95	--	--	13.93	16.94	--	--		
6-10			9.31	8.34	32.07	-					1.18	1.00	--	--	14.78	17.97	--	--		
11-20			9.70	8.69	33.42	-					1.23	1.05	--	--	15.40	18.72	--	--		
> 20			9.73	8.72	33.52	-					1.24	1.07	--	--	15.44	18.78	--	--		

Table 13. Performance of 200-300 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS		
	Mid-silk (da)		Lodging (%)		Mid-silk (da)	S. rot (Rating)	
	Mich.	N. D.	Mich.	N. D.	Mich.	Mich.	M. Wis.
W37A	79	65	8.3	10.3	78	3.8	4.4
W357	77	57	0.0	6.7	76	2.3	1.7
A90	82	62	4.3	0.0	81	3.6	4.8
CH9	81	64	0.0	10.3	81	2.2	1.3
W153R	76	61	3.3	5.0	78	4.3	2.7
W33	75	61	23.3	1.7	76	3.5	5.8
W79A	78	57	2.6	8.7	78	3.9	3.3
A498	76	61	20.8	1.0	76	3.5	5.8
Strain MS(7df)	17.90**	24.26**	253.71	52.95	14.57**	1.71*	9.08**
Error MS(14df)	1.17	2.10	107.36	25.09	2.41	0.55	0.08

No. in range

Difference necessary for significance

2	-	-	1.30	0.50
3-5	-	-	1.42	0.55
6-8	-	-	1.46	0.57

Table 14. Performance of 200-300 maturity hybrids in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS					
	Mid-silk (da)		Lodging (%)		Yield (bu)		Mid-silk (da)		S. rot (rating)	
	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	N.D.	Mich.	Wis.
W37A x W357	72	59	1.7	36.7	100.6	76.4	72	3.2	3.4	
W37A x A90	73	59	0.0	21.0	80.3	66.4	75	2.9	3.8	
W37A x CH9	75	58	3.3	26.7	94.8	84.5	73	3.4	3.1	
W37A x W15R	73	59	15.0	55.0	95.1	79.4	72	3.2	3.0	
W37A x W33	71	55	10.1	26.7	85.5	61.3	71	3.2	4.1	
W37A x W79A	70	60	13.3	46.7	88.9	62.6	71	4.0	5.6	
W37A x A498	72	58	14.2	30.0	92.4	78.1	74	3.0	4.3	
W357 x A90	73	62	1.7	60.3	86.6	78.7	73	2.6	2.3	
W357 x CH9	71	57	1.7	20.0	106.1	65.2	72	2.4	2.2	
W357 x W15R	70	59	7.5	23.3	89.3	70.4	71	3.3	3.2	
W357 x W33	70	60	5.3	43.3	70.4	82.7	71	2.7	3.5	
W357 x W79A	69	62	2.5	41.7	80.8	75.9	69	3.0	4.2	
W357 x A498	69	62	7.3	26.7	61.1	72.3	71	2.8	3.7	
A90 x CH9	73	62	0.8	53.3	101.0	80.3	73	2.7	1.8	
A90 x W15R	71	60	0.8	73.3	89.8	69.9	71	2.6	3.3	
A90 x W33	71	60	0.0	36.7	81.3	62.8	71	2.8	3.7	
A90 x W79A	70	58	5.3	36.7	65.9	66.0	69	3.7	4.7	
A90 x A498	71	61	0.8	53.3	69.1	74.1	72	2.6	3.1	
CH9 x W15R	71	61	9.3	23.3	110.9	77.2	72	2.3	3.2	
CH9 x W33	72	60	2.5	30.0	92.6	64.7	72	3.0	3.1	
CH9 x W79A	70	59	11.7	56.7	85.0	71.0	70	3.7	4.7	
CH9 x A498	72	61	7.5	70.0	87.3	68.0	72	2.8	3.4	
W15R x W33	71	61	18.3	36.7	80.7	80.3	69	3.5	3.2	

Table 14. Continued

W15R x W79A	70	62	7.8	50.0	87.4	71.5	70	3.9	4.1
W15R x A498	71	60	10.8	20.0	70.2	72.2	70	2.9	4.1
W33 x W79A	70	62	13.3	31.7	71.3	64.5	71	3.6	5.4
W33 x A498	70	60	5.8	16.7	70.0	79.1	69	3.1	4.9
W79A x A498	70	61	13.3	5.0	53.3	78.7	70	3.2	5.4
Strain MS(27df)	5.68**	7.98**	86.08	728.93**	563.60**	136.94**	6.81**	0.56	2.73**
Error MS(54df)	1.71	0.85	52.40	173.26	26.62	20.86	0.97	0.40	0.19
Difference necessary for significance									
No. in range									
2	-	-	-	21.73	8.52	7.54	-	-	2.26
3-5	-	-	-	24.08	9.44	8.36	-	-	2.50
6-10	-	-	-	25.45	9.98	8.78	-	-	2.65
11-20	-	-	-	26.37	10.34	9.15	-	-	2.75
> 20	-	-	-	26.37	10.34	9.18	-	-	2.75

Table 15. Performance of 500-600 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS				DISEASE TESTS											
	Mid-silk (da)		S.Rot(%)		Lodg. (%)		Mid-silk (da)				S. Rot (rating)					
	Ind.	Mich.	Ind.	Mich.	Ind.	Mich.	Ind.	Mich.	Ind.	Mich.	Min ^a /Min ^b	Ohio	Ill.			
W22	74	89	6.9	5.1	74	86	91	81	3.3	1.8	1.5	1.0	2.2	1.0		
W9	77	90	0.0	1.6	75	86	89	76	2.9	2.6	3.1	2.1	3.0	3.6		
B8	68	78	77.7	8.3	68	76	85	71	5.5	3.0	3.0	1.8	3.0	4.9		
OR43E	72	86	46.2	0.8	72	83	88	72	4.5	1.8	3.4	2.6	3.2	4.8		
NS129	78	90	5.5	0.0	77	87	95	78	4.3	3.4	3.8	2.8	3.4	3.8		
MA87R	76	91	63.7	0.8	76	87	94	77	5.9	1.6	2.9	1.5	3.2	3.4		
W23	74	84	94.5	13.3	74	81	86	76	5.9	3.3	3.2	2.1	4.5	4.4		
L289	75	88	100.0	12.5	75	85	90	77	6.0	3.5	3.0	1.9	3.0	5.7		
OH28	77	91	93.7	1.7	77	88	93	77	5.8	3.1	3.9	1.7	3.7	4.5		
Strain MS(8df)	26.00**	50.43**	5079.89**	82.18	22.83**	45.17**	33.45**	29.26**	4.24**	1.73**	1.51**	0.84**	1.14**	5.30**		
Error MS(16df)	0.44	1.43	191.91	39.53	0.44	1.07	1.80	2.18	0.10	0.36	0.10	0.04	0.18	0.15		
No. in range	Difference necessary for significance															
2	23.99 -															
3-5	26.39 -															
6-9	27.11 -															
a/ Diploдия																
b/ Gibberella																

Table 16.. Performance of 500 - 600 maturity hybrids in cooperative stalk lodging and stalk rot tests, 1961.

Strain	Yield Tests									
	Mid-silk (ds)		S. rot (%)		Lodging (%)		Yield (bu)			
	Ind.	Mich.	Ohio	Ind.	Mich.	Ohio	Ind.	Mich.	Ohio	
W22 x WF9	70	81	81	47.6	3.6	0.0	9.4	127.8	80.0	104.2
W22 x B8	67	78	80	68.1	27.0	6.7	33.4	103.1	69.9	102.5
W22 x Oh43E	68	82	82	46.5	7.6	3.4	3.3	113.5	57.9	118.8
W22 x MS129	72	84	84	61.2	10.4	0.0	11.3	133.4	66.5	114.2
W22 x W187R	72	84	85	66.7	16.5	1.7	3.3	120.3	72.9	115.7
W22 x W23	70	81	83	63.3	31.1	2.5	20.8	99.8	84.0	104.1
W22 x L289	69	81	83	76.6	39.3	6.7	53.3	132.1	74.5	111.4
W22 x Oh28	74	85	85	46.2	12.4	3.3	21.3	124.2	78.0	123.7
WF9 x B8	67	79	80	33.5	12.0	3.3	9.1	111.8	82.0	93.0
WF9 x Oh43E	68	81	80	29.0	4.7	1.7	1.1	138.1	69.7	120.9
WF9 x MS129	70	82	83	47.1	21.7	1.7	32.5	120.8	64.9	105.7
WF9 x W187R	72	84	83	68.2	12.6	7.9	40.5	136.5	66.7	98.4
WF9 x W23	69	80	80	64.5	3.3	0.0	30.4	114.6	77.1	94.3
WF9 x L289	70	83	83	49.0	12.5	5.1	32.5	143.4	63.1	110.8
WF9 x Oh28	71	84	83	42.5	12.1	0.8	7.3	130.9	61.0	113.0

Table 16.. Continued

B8 x Oh43E	67	76	78	52.0	9.9	2.5	20.7	104.0	87.1	89.6
B8 x MS129	68	78	80	37.3	24.3	2.6	34.0	101.0	78.7	99.1
B8 x W187R	68	81	82	81.0	58.9	0.0	50.8	110.6	89.4	98.6
B8 x W23	67	76	80	52.9	42.3	23.3	46.8	88.8	69.5	80.4
B8 x L289	68	78	80	84.4	69.7	15.0	68.7	94.0	77.9	86.8
B8 x Oh28	69	80	81	29.2	33.0	8.6	19.2	88.3	56.3	94.7
Oh43E x MS129	70	84	83	27.3	4.7	2.5	13.1	130.3	59.1	120.0
Oh43E x W187R	69	84	82	74.0	20.6	0.8	19.7	148.8	67.6	118.0
Oh43E x W23	68	79	80	66.5	41.6	15.0	38.6	103.4	79.4	93.4
Oh43E x L289	69	82	82	32.0	18.0	0.8	17.0	124.8	68.3	116.7
Oh43E x Oh28	69	86	82	42.9	10.1	0.8	13.3	128.4	67.7	115.1
MS129 x W187R	74	86	87	47.1	34.8	0.8	40.7	133.1	67.9	124.7
MS129 x W23	69	83	82	37.9	24.0	3.4	21.2	104.7	56.3	102.0
MS129 x L289	71	87	85	45.5	58.3	0.0	45.6	138.1	57.3	104.2
MS129 x Oh28	72	87	86	65.5	33.6	0.9	25.2	131.3	59.8	107.6
W187R x W23	69	83	81	75.8	67.8	6.7	62.7	111.9	52.1	109.7
W187R x L289	71	86	83	74.1	73.6	1.0	46.1	119.7	56.6	102.6
W187R x Oh28	74	88	87	64.0	41.5	1.7	45.1	122.2	50.5	117.2

Table 16. Continued

W 23 x L289	68	82	82	50.0	69.7	2.8	50.0	114.3	63.7	104.4
W23 x Oh28	70	85	83	69.2	61.5	0.8	52.3	110.1	53.6	104.6
L289 x Oh28	73	86	84	58.2	53.9	0.0	52.2	120.1	53.1	109.8
Strain MS (35df)	12.16**	28.64**	12.26**	775.53**	1434.36**	75.56**	991.24**	701.77**	332.62**	355.29**
Error MS (70df)	0.84	1.25	0.67	373.31	148.16	24.54	274.16	111.51	16.86	61.84
No. in range	Difference necessary for significance									
2	31.57	19.89	8.09	27.05	17.25	6.71	10.75	11.93	12.65	13.18
3 - 5	35.02	22.06	8.98	30.01	19.14	7.44	11.93	12.65	13.18	13.22
6 - 10	37.15	23.40	9.52	31.83	20.30	7.89	12.65	13.18	13.22	13.22
11 - 20	38.71	24.38	9.93	33.17	21.15	8.23	13.18	13.22	13.22	13.22
> 20	38.82	24.45	9.95	33.27	21.22	8.25	13.22	13.22	13.22	13.22

Table 16.

Performance of 500-600 maturity hybrids in
cooperative stalk lodging and stalk rot tests, 1961.

Strain	Disease Tests									
	Mid-silk (da)				S. rot (rating)					
	Ind.	Mich.	Ohio	Ill.	Ind.	Mich.	Ohio	Minn. ^a	Minn. ^b	Ill.
W22 x WF9	70	80	82	73	2.8	1.8	2.9	3.1	1.4	1.9
W22 x B8	68	76	81	70	3.3	1.5	3.0	3.9	1.2	2.7
W22 x Oh43E	69	80	82	72	2.7	1.3	2.8	3.0	2.2	1.7
W22 x MS129	72	83	86	75	3.0	2.2	3.4	3.7	1.3	2.6
W22 x W187R	72	83	85	75	4.5	1.3	3.2	2.3	1.2	1.2
W22 x W23	70	80	82	74	4.5	2.6	3.2	4.0	2.2	4.0
W22 x L289	69	79	83	72	4.2	1.6	2.6	3.8	1.4	1.5
W22 x Oh28	73	84	86	76	3.7	2.5	3.4	3.9	1.5	2.2
WF9 x B8	68	76	81	71	4.0	2.2	3.1	3.5	1.6	2.9
WF9 x Oh43E	68	79	81	71	1.9	1.4	3.5	3.6	2.2	1.9
WF9 x MS129	71	81	84	74	3.7	2.4	2.6	3.8	1.8	3.2
WF9 x W187R	72	82	86	74	3.7	1.4	2.9	3.6	1.1	2.0
WF9 x W23	68	81	81	71	4.0	2.3	3.9	3.8	1.7	2.9
WF9 x L289	69	79	83	71	2.6	1.8	2.8	3.0	1.5	2.2
WF9 x Oh28	71	82	83	74	4.4	1.5	3.5	3.8	2.0	3.2
B8 x Oh43E	67	73	79	69	3.1	1.5	3.4	3.7	1.6	3.4
B8 x MS129	68	76	80	70	4.4	2.4	3.2	4.0	1.4	3.7
B8 x W187R	69	78	84	71	5.1	1.1	2.7	3.4	1.2	2.4
B8 x W23	67	74	81	69	5.0	2.6	3.7	3.9	1.7	4.3
B8 x L289	66	74	81	69	5.0	2.0	4.2	3.9	1.5	3.6
B8 x Oh28	68	76	81	70	4.6	2.6	4.2	3.9	1.2	4.0

Table 16. Continued

Oh43E x MS129	71	83	85	72	2.6	1.7	2.7	4.0	1.8	1.9
Oh43E x W187R	70	82	83	71	3.0	1.6	3.6	3.8	1.6	2.9
Oh43E x W23	68	77	81	70	4.4	2.1	3.6	3.9	2.6	4.9
Oh43E x L289	69	78	82	70	2.8	1.5	2.8	3.3	1.7	2.5
Oh43E x Oh28	71	82	83	73	3.3	1.7	3.9	3.9	1.9	3.3
MS129 x W187R	74	84	87	76	4.1	2.6	3.2	4.0	1.3	2.4
MS129 x W23	68	79	82	73	4.7	3.4	3.8	4.1	1.9	3.7
MS129 x L289	70	80	86	74	3.7	2.1	2.6	4.0	1.5	2.1
MS129 x Oh28	73	84	87	76	4.0	3.1	3.6	4.2	2.1	3.6
W187R x W23	70	80	81	70	5.4	2.2	4.2	4.1	1.3	4.1
W187R x L289	71	82	85	73	4.8	1.8	3.1	4.1	1.2	1.8
W187R x Oh28	74	85	87	75	4.1	2.4	3.1	3.6	1.2	3.0
W23 x L289	68	77	82	71	4.5	2.0	3.1	3.9	2.2	4.2
W23 x Oh28	70	79	83	73	4.5	3.4	4.1	4.0	1.8	4.1
L289 x Oh28	70	81	85	74	4.9	2.1	3.8	3.9	1.5	3.2
Strain MS (35df)	11.93**	29.71**	13.54**	13.90**	2.22**	0.99**	0.71**	0.43**	0.42**	2.53**
Error MS (70df)	0.61	2.20	0.70	0.62	0.28	0.34	0.27	0.12	0.09	0.20
No. in range	Difference necessary for significance									
2	0.86 0.95 0.85 0.55 0.40 0.72									
3 - 5	0.95 1.06 0.94 0.61 0.55 0.80									
6 - 10	1.00 1.12 0.99 0.65 0.58 0.85									
11 - 20	1.05 1.17 1.04 0.68 0.61 0.89									
> 20	1.06 1.17 1.05 0.69 0.61 0.89									

^a/Diplodia^b/Gibberella

Table 17.. Performance of 700-800 maturity inbreds in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS															
	Mid-silk (da)					S. rot (%)					Lodging (%)					
	Ind.	Mo.	Ill.	Ky.	Va.	Ind.	Mo.	Ia.	Ill.	Nebr.	Mo.	Ia.	Ill.	Nebr.	Ky.	Va.
B41	78	88	84	76	86	0.0	100.0	15.5	17.8	0.0	3.3	30.2	1.1	1.8	3.5	4.3
B14	78	93	82	76	85	0.0	73.3	92.6	94.4	0.0	0.0	55.6	0.0	3.3	3.9	1.4
C103	78	91	83	77	86	0.0	6.7	53.1	68.9	0.0	6.7	76.1	2.2	0.0	1.4	0.8
K757	75	80	79	72	80	51.3	80.0	49.5	100.0	0.0	10.7	41.9	43.3	5.6	15.3	8.7
R109B	75	91	82	76	86	0.0	13.7	93.4	56.8	0.0	0.0	75.6	20.3	0.0	3.9	4.7
38-11	80	92	84	79	89	0.0	34.3	7.6	91.2	0.0	0.0	3.6	72.0	4.2	21.2	7.3
Mo940	80	90	84	77	87	0.0	100.0	39.1	100.0	5.3	43.3	49.8	97.8	14.2	29.6	8.0
Os420	77	92	82	77	86	58.3	100.0	48.7	100.0	80.5	15.0	70.6	22.0	8.1	20.4	9.4
H55	79	91	84	76	84	0.0	80.0	75.8	66.7	0.0	10.0	64.9	44.4	0.0	13.4	7.0
K159	80	93	84	81	85	0.0	50.0	97.8	10.5	5.6	11.1	80.3	26.3	0.0	0.0	6.6
Strain NS(9df)	12.15	44.02	8.97	17.07	18.07	1611.74	3793.12	3075.95	3398.36	1900.30	497.82	1605.02	3112.68	64.10	310.60	26.36
Error NS(18df)	0.46	10.51	1.61	1.94	1.09	36.23	280.85	502.11	82.73	40.64	183.27	1053.46	77.52	35.62	112.95	1.36

No. in range

Difference necessary for significance

2

3-5

6-9

10.32	28.66	38.42	15.60	10.93	23.21	-	15.10	-	18.22	2.00
11.36	31.55	42.30	17.17	12.04	25.56	-	16.62	-	20.06	2.20
11.78	32.71	43.86	17.80	12.48	26.50	-	17.23	-	20.80	2.28

Table 17. (Cont'd.)

Strain	Mid-silk (da)						S. rot (rating)						
	Ill.			Va.			Ohio			N. C.			
	Ind.	Mo.	Ill.	Ind.	Mo.	Ill.	Ind.	Mo.	Ill.	Ind.	Mo.	Ill.	
B41	77	87	84	79	88	70	3.9	3.9	3.0	3.7	1.0	2.6	3.6
B14	78	93	82	80	92	70	4.9	2.6	2.8	5.4	0.8	2.6	3.8
C103	78	91	82	79	87	72	2.9	2.9	3.9	4.3	0.5	2.8	3.4
K757	75	80	79	76	80	69	5.5	3.6	3.7	4.3	2.8	4.1	4.6
R109B	77	91	81	78	88	72	3.7	2.9	2.5	4.3	2.3	3.2	3.5
38-11	81	92	87	79	92	76	3.7	4.5	3.4	4.6	1.0	2.9	3.8
Mo940	80	90	84	79	88	75	5.3	3.4	2.9	5.9	3.3	3.6	3.7
Os420	77	92	82	81	89	71	6.0	1.7	3.6	6.0	5.5	3.7	4.1
H55	79	92	84	78	88	73	3.7	2.9	3.1	4.7	0.8	2.7	3.6
K159	81	93	84	83	88	73	3.5	2.8	3.6	3.6	0.8	3.5	3.6
Strain MS(9df)	12.80**	44.02**	13.94**	10.97**	30.25**	14.95**	3.09**	1.79**	0.60	2.07**	7.69**	0.84*	0.38
Error MS(18df)	0.85	10.51	1.37	2.66	3.02	1.08	0.13	0.64	3.45	0.28	1.01	0.28	0.37

No. in range

2

3-5

6-10

Difference necessary for significance

0.61 1.37 — 0.91 1.72 0.90 —

0.67 1.51 — 1.00 1.89 0.99 —

0.70 1.58 — 1.04 1.97 1.03 —

Table 18.. Performance of 700-800 maturity hybrids in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS							
	Mid-silk (da)				S. rot (%)			
	Ind.	Ill.	Ky.	Va.	Mo.	Ia.	Ill.	Nebr.
B41 x B14	73	75	69	78	83.3	20.9	32.1	0.0
B41 x C103	75	77	72	81	92.2	53.6	14.8	2.9
B41 x K757	74	75	69	80	96.5	24.7	30.0	3.3
B41 x R109B	72	74	69	79	52.5	30.5	11.1	0.0
B41 x 38-11	73	76	70	79	86.2	74.3	22.7	0.0
B41 x Mo940	76	78	71	81	100.0	96.1	78.9	0.0
B41 x Os420	71	74	69	79	96.6	75.6	100.0	21.3
B41 x H55	75	77	71	80	86.4	68.1	30.2	0.0
B41 x K159	75	77	70	79	80.2	22.6	3.5	1.4
B14 x C103	75	77	71	80	66.2	12.0	35.7	2.0
B14 x K757	72	74	70	79	37.5	15.5	43.3	0.0
B14 x R109B	74	76	70	80	34.9	6.8	37.8	0.0
B14 x 38-11	75	77	71	80	95.6	70.4	97.8	1.9
B14 x Mo940	75	77	72	80	79.0	68.6	70.8	1.4
B14 x Os420	72	74	69	76	81.3	92.2	70.0	8.6
B14 x H55	75	77	71	80	55.6	10.4	1.1	0.0
B14 x K159	75	75	69	79	63.2	8.7	37.8	3.9
C103 x K757	73	76	71	79	100.0	64.2	100.0	40.7
C103 x R109B	74	76	69	79	14.9	17.9	47.8	1.4
C103 x 38-11	76	78	73	82	76.7	58.4	64.4	16.1
C103 x Mo940	76	79	72	82	85.4	77.4	81.1	3.5
C103 x Os420	73	76	71	79	100.0	80.5	96.6	52.7
C103 x H55	76	78	73	82	61.3	44.1	59.5	0.0
C103 x K159	75	76	72	81	42.1	22.0	16.9	0.0

Table 18.. Continued

K757 x R109B	73	76	70	80	62.5	28.4	13.6	0.0
K757 x 38-11	74	76	70	78	100.0	88.3	100.0	17.8
K757 x Mo940	75	77	72	79	84.4	94.1	100.0	2.9
K757 x Os420	73	75	70	77	92.4	83.0	100.0	35.9
K757 x H55	74	77	70	79	85.3	43.3	73.3	1.7
K757 x K159 ^{a/}	--	76	70	80	42.4	47.7	11.5	0.0
R109B x 38-11	73	76	70	79	55.6	75.0	73.6	0.0
R109B x Mo940	77	78	73	82	90.0	59.2	44.4	3.3
R109B x Os420	70	71	69	76	55.3	52.5	59.8	3.3
R109B x H55	75	78	71	81	18.2	30.3	2.2	2.4
R109B x K159 ^{a/}	--	74	69	70	12.2	9.3	9.8	0.0
38-11 x Mo940	78	79	73	80	85.1	87.0	85.4	2.0
38-11 x Os420	74	77	72	82	100.0	100.0	92.0	24.9
38-11 x H55	76	79	73	80	94.4	89.8	76.0	1.4
38-11 x K159	74	76	71	80	43.3	46.2	1.1	1.4
Mo940 x Os420	74	76	70	79	100.0	81.7	100.0	62.2
Mo940 x H55	77	78	73	81	100.0	73.5	50.8	0.0
Mo940 x K159	76	78	71	80	45.8	51.5	25.8	0.0
Os420 x H55	73	76	70	77	90.8	88.5	98.9	18.5
Os420 x K159	72	74	70	78	80.7	71.3	38.2	4.3
H55 x K159	74	77	70	79	28.9	43.2	0.0	0.0
Strain MS(44df)	8.88**	7.60**	4.83**	6.20**	2040.35**	2471.89**	3601.29**	625.74**
Error MS(88df)	1.10	0.74	0.84	1.48	335.43	243.79	700.04	45.16
No. in range	Difference necessary for significance							
2					29.92	25.51	43.23	10.98
3-5					33.20	28.31	47.97	12.18
6-10					35.21	30.02	50.87	12.92
11-20					36.69	31.28	53.01	13.46
> 20					36.80	31.37	53.16	13.50

^{a/} Not included in Ind. yield tests.

Table 18. Continuation from Table 16a. Performance of 700-800 maturity hybrids in cooperative stalk lodging and stalk rot tests, 1961.

Strain	YIELD TESTS													
	Lodging (%)							Yield (bu)						
	Ind.	No.	Ia.	Ill.	Nebr.	Ky.	Va.	Ind.	Mo.	Ill.	Nebr.	Ky.	Va.	
B41 x B14	0.8	4.8	12.3	0.0	7.7	5.8	5.9	124.4	97.8	97.8	116.0	103.2	125.3	
B41 x C103	13.3	11.2	31.3	2.4	12.0	7.0	18.6	151.6	105.4	77.1	147.1	125.6	142.7	
B41 x K757	27.5	16.6	19.9	29.3	16.3	7.4	29.3	107.1	86.1	84.1	99.1	102.5	106.8	
B41 x R109B	0.0	12.3	19.9	1.1	0.0	3.6	7.9	132.6	86.4	98.3	107.7	108.8	123.8	
B41 x 38-11	5.5	25.2	74.4	13.0	9.1	11.7	39.8	141.5	99.6	98.2	149.3	124.8	109.8	
B41 x Mo940	32.8	25.1	72.7	60.0	19.5	15.4	92.2	146.3	87.1	111.4	136.5	126.9	109.9	
B41 x Os420	42.8	20.3	56.2	5.7	19.8	14.1	39.4	106.7	90.8	88.4	120.8	95.9	107.4	
B41 x H55	7.9	7.9	59.6	24.3	5.0	10.1	21.7	163.4	103.0	109.8	144.5	108.7	131.8	
B41 x K159	8.8	19.8	25.6	2.4	2.8	16.0	7.0	116.0	85.5	69.9	123.5	94.6	112.1	
B14 x C103	0.9	0.0	4.7	0.0	2.8	1.8	2.0	143.6	99.9	103.6	118.2	128.3	116.3	
B14 x K757	6.0	4.0	12.7	7.9	0.0	4.1	4.4	102.6	77.6	49.0	74.6	70.0	79.5	
B14 x R109B	1.6	2.2	8.3	4.4	3.8	0.9	77.2	119.4	82.3	89.3	98.1	114.1	88.1	
B14 x 38-11	18.7	9.3	38.4	35.6	11.8	6.5	50.8	117.6	84.7	92.1	119.6	103.0	103.4	
B14 x Mo940	37.8	14.4	69.2	28.3	6.1	5.9	58.5	130.4	96.3	101.0	129.6	107.1	117.9	
B14 x Os420	13.2	8.2	70.3	0.0	7.2	5.0	32.2	112.4	99.9	67.2	117.9	123.1	109.4	
B14 x H55	5.2	8.1	25.5	0.0	3.3	4.9	37.3	140.0	89.4	75.3	123.8	116.0	101.1	
B14 x K159	12.7	14.9	9.3	8.9	2.0	6.1	8.3	93.8	88.2	80.6	106.6	91.2	99.7	
C103 x K757	49.0	21.2	47.9	40.7	28.3	8.6	29.4	87.7	84.6	91.3	120.5	113.9	118.3	
C103 x R109B	11.5	4.6	14.6	13.8	7.1	2.9	17.6	137.8	89.2	97.8	134.1	129.1	121.3	
C103 x 38-11	18.0	8.9	43.8	38.6	12.7	3.5	37.9	114.3	106.4	88.1	115.7	121.6	124.7	
C103 x Mo940	58.3	8.9	81.5	71.5	18.6	14.1	83.4	105.6	88.3	91.7	113.0	118.3	123.1	
C103 x Os420	22.0	5.6	51.8	33.0	22.8	11.3	62.7	111.8	91.6	70.7	125.5	110.6	110.8	
C103 x H55	34.6	2.3	43.8	25.0	1.4	6.3	30.9	140.8	114.7	107.4	133.7	114.0	119.5	

Table 18.. Continued

ClO3 x K159	33.2	14.8	17.6	23.0	2.2	7.1	14.6	117.9	83.3	100.1	108.2	98.4	119.1
K757 x R109B	31.9	4.1	25.6	11.9	0.0	2.9	40.5	85.9	71.9	42.8	69.8	71.0	89.3
K757 x 38-11	55.5	17.8	79.1	67.0	43.2	22.1	40.4	93.1	100.4	88.8	127.5	120.1	111.8
K757 x Mo940	65.2	55.6	89.4	96.6	35.8	14.0	89.2	80.5	102.8	94.0	113.2	103.1	116.1
K757 x O420	46.9	7.6	63.6	30.8	5.6	14.2	63.5	82.4	68.7	43.5	75.7	78.3	88.1
K757 x H55	48.3	21.5	51.9	38.7	10.4	14.8	50.6	93.1	93.7	65.9	117.6	124.3	83.8
K757 x K159 ^{a/}	--	17.0	41.0	13.2	19.3	4.3	30.9	--	86.3	46.4	129.8	53.3	112.8
R109B x 38-11	16.5	27.9	30.9	48.5	5.0	21.4	27.5	121.9	89.5	95.7	105.9	121.2	117.7
R109B x Mo940	33.0	11.1	71.7	60.0	4.8	11.1	70.1	117.2	90.1	95.3	110.2	83.6	96.3
R109B x O420	15.9	10.2	45.3	9.0	16.1	15.1	28.9	104.2	95.7	95.6	110.8	106.8	97.1
R109B x H55	11.8	16.3	44.7	3.3	10.8	5.9	40.6	126.0	90.4	61.6	99.2	120.4	91.0
R109B x K159 ^{a/}	--	11.3	27.6	8.9	3.1	1.9	10.8	--	91.2	90.1	114.5	84.6	108.1
38-11 x Mo940	49.0	68.0	81.0	57.0	3.9	24.0	83.9	117.2	96.5	56.3	96.9	104.4	104.2
38-11 x O420	44.7	8.9	24.0	55.6	32.2	21.4	88.0	112.3	78.6	81.1	126.3	102.7	89.6
38-11 x H55	52.1	18.9	85.0	52.4	5.0	12.9	75.6	140.3	100.9	102.9	132.7	120.4	112.5
38-11 x K159	17.1	25.6	47.7	8.9	15.2	13.5	22.5	117.5	92.6	89.3	116.5	105.7	113.4
Mo940 x O420	72.8	60.7	82.1	82.5	41.7	34.2	95.2	95.0	88.9	53.9	98.3	104.9	104.0
Mo940 x H55	82.0	51.5	82.4	63.2	6.9	13.9	93.7	114.1	77.9	99.7	121.5	128.7	106.5
Mo940 x K159	51.4	38.0	72.8	41.4	27.7	13.7	94.0	106.1	75.7	61.0	113.3	109.4	109.0
O420 x H55	41.9	32.1	70.4	33.3	27.5	18.0	82.4	129.2	99.2	70.6	115.7	115.1	104.9
O420 x K159	19.5	16.0	64.1	5.6	18.7	11.5	37.3	106.0	84.9	96.2	126.2	89.2	117.0
H55 x K159	19.8	33.3	64.7	3.3	0.0	17.1	36.3	137.6	89.5	100.2	135.2	109.4	100.1
Strain NS(444F)	134.3 ¹⁶	728.88	1902.26	1939.50	389.57	146.31	2555.28	1164.34	266.43	1037.29	890.09	872.56	512.03
Error NS(884F)	201.74	132.54	308.95	185.38	119.60	74.53	334.17	201.56	120.52	643.27	208.71	317.63	112.34

Difference necessary for significance

No. in range

2	23.21	18.81	28.72	22.25	17.87	14.11	29.87	41.44	23.60	29.12	17.32
3-5	25.75	20.87	31.86	24.68	19.83	15.65	33.14	25.74	19.90	32.31	19.21
6-10	27.31	22.13	33.79	26.18	21.03	16.60	35.14	27.30	21.11	48.76	20.38
11-20	28.46	23.06	35.21	27.28	21.91	17.30	36.62	28.44	21.99	50.82	28.94
> 20	28.54	23.13	35.32	27.36	21.97	17.34	36.73	28.53	22.06	50.96	29.03
										35.81	21.30

^{a/} Not included in Ind. yield tests.

Table 18.
stalk rot tests, 1961.

DISEASE TESTS													
Strain	Mid-silk (da)				S. rot (rating)								
	Ind.	Mo.	Ill.	Va.	Ohio	N. C.	Ind.	Mo.	Ia.	Ill.	Va.	Ohio	N. C.
B41 x B14	75	84	76	72	82	68	2.9	3.8	0.9	2.0	0.4	2.2	2.4
B41 x C103	74	83	76	71	80	67	2.9	3.1	1.8	3.1	0.2	2.2	1.8
B41 x K757	73	84	75	72	79	67	4.5	3.5	1.6	2.8	0.2	2.4	2.3
B41 x R109B	72	82	74	71	79	65	3.8	3.5	0.9	2.8	1.4	2.3	3.2
B41 x 38-11	75	84	76	73	80	68	3.3	3.7	1.2	3.3	0.9	2.3	2.7
B41 x Mo940	76	85	77	75	82	68	3.8	3.5	1.1	3.1	0.3	2.2	2.4
B41 x Os420	72	82	74	68	77	66	5.8	4.1	1.4	5.5	0.5	3.6	2.6
B41 x H55	74	84	77	71	81	68	3.4	3.3	2.2	1.6	0.2	2.3	2.5
B41 x K159	75	82	75	72	82	66	3.3	3.5	1.1	3.6	0.8	2.4	2.4
B14 x C103	75	82	77	72	80	69	2.5	3.5	1.6	1.1	0.2	1.2	2.0
B14 x K757	73	82	74	70	80	66	4.0	4.0	1.4	3.2	0.5	2.4	2.9
B14 x R109B	75	84	76	71	82	67	3.7	3.8	1.6	3.2	2.3	2.4	2.8
B14 x 38-11	75	85	76	73	82	69	3.9	4.1	1.3	4.0	1.0	1.8	2.8
B14 x Mo940	76	84	76	73	82	69	4.0	4.0	1.3	4.5	0.8	2.3	3.1
B14 x Os420	72	81	74	69	80	67	5.4	4.2	0.7	5.2	0.4	2.0	2.8
B14 x H55	75	86	76	70	82	69	4.0	3.3	1.7	2.4	0.2	2.4	2.8
B14 x K159	75	82	76	74	84	69	4.1	3.7	2.7	4.5	0.8	2.1	2.6
C103 x K757	73	85	76	72	80	66	5.0	3.5	1.6	3.9	0.3	2.1	2.5
C103 x R109B	72	81	75	69	78	66	3.0	4.4	1.4	3.3	0.1	1.7	2.3
C103 x 38-11	76	87	79	74	82	70	2.9	4.1	1.2	3.5	0.3	2.0	2.4
C103 x Mo940	76	83	78	73	80	68	3.3	3.2	2.0	3.0	0.4	2.0	2.1
C103 x Os420	72	81	75	70	79	65	5.5	3.6	2.1	5.9	0.5	3.4	2.3
C103 x H55	75	85	78	71	82	69	3.7	2.6	2.2	1.0	0.1	1.6	2.7
C103 x K159	75	82	76	72	81	67	3.3	3.6	1.3	2.0	0.2	2.1	1.9
K757 x R109B	74	84	75	71	79	66	4.0	3.6	0.7	3.8	0.6	2.9	3.6

Table 18. Continued

K757 x 38-11	74	82	76	69	79	69	4.1	4.6	1.1	5.9	1.3	2.7	3.1
K757 x Mo940	76	86	78	71	80	69	4.4	3.8	1.0	5.6	0.6	2.5	3.2
K757 x Os420	72	80	76	69	77	66	5.2	4.1	1.2	5.4	1.4	2.9	2.3
K757 x H55	75	82	76	71	80	66	4.3	3.2	0.2	3.7	0.5	3.0	2.4
K757 x K159 ^a /	76	81	77	69	80	--	4.1	3.3	2.5	3.9	0.1	2.5	--
R109B x 38-11	75	83	76	70	79	69	3.8	4.3	1.0	4.2	1.8	2.5	3.4
R109B x Mo940	76	84	78	75	81	69	4.1	3.4	1.8	4.7	1.5	2.8	3.9
R109B x Os420	70	82	71	69	76	66	4.8	4.2	1.2	5.3	2.7	3.6	2.7
R109B x H55	75	85	78	70	80	69	4.0	3.8	1.0	2.6	0.9	2.3	3.5
R109B x K159 ^a /	72	84	74	71	83	--	4.0	4.0	2.5	4.6	0.2	2.6	--
38-11 x Mo940	77	87	78	74	82	70	3.9	4.1	1.9	5.0	3.0	2.6	2.5
38-11 x Os420	75	85	77	75	80	68	4.2	3.8	2.1	5.6	1.8	2.2	2.4
38-11 x H55	77	84	79	72	81	71	4.0	3.2	2.0	3.9	0.9	2.0	2.4
38-11 x K159	75	84	76	75	82	70	3.8	3.7	0.8	3.5	0.7	2.7	2.7
Mo940 x Os420	72	84	75	72	79	66	5.8	3.8	1.6	6.0	0.8	2.9	2.6
Mo940 x H55	77	84	78	74	82	69	4.0	3.8	1.7	3.4	0.3	2.1	2.5
Mo940 x K159	75	86	78	75	81	69	3.9	3.1	1.0	3.9	0.1	2.9	2.7
Os420 x H55	72	81	75	68	79	67	4.7	4.1	1.1	5.3	1.1	2.9	3.4
Os420 x K159	72	81	74	71	81	65	5.1	3.6	1.2	5.5	1.0	2.7	2.9
H55 x K159	75	84	76	74	81	69	3.9	3.0	1.9	2.2	0.5	1.9	2.9
Strain NS(44df)	9.27**	9.23*	7.53**	11.33**	7.70**	6.95**	1.72**	0.50	0.77	5.19**	1.39**	0.72**	0.60**
Error NS(88df)	1.04	6.09	0.82	2.86	1.20	1.34	0.12	0.34	0.58	0.56	0.44	0.20	0.30

No. in range

Difference necessary for significance

2	0.58	--	--	1.22	1.09	0.74	0.90
3-5	0.64	--	--	1.35	1.21	0.82	1.00
6-10	0.68	--	--	1.44	1.28	0.87	1.06
11-20	0.71	--	--	1.50	1.33	0.91	1.10
> 20	0.71	--	--	1.50	1.34	0.91	1.10

^a/ Not included in N. Carolina tests.

Table 13. Relative performance of inbred lines as lines and in hybrid combination (average of all hybrids in set of diallel crosses containing the inbred).

CHARACTER AND STRAIN

INHERED LINES

100 maturity

		V3	ND203	WD	SD48	ND230	GD55	WL5	WL03	ND283
♂ S. Rot	- In hybrids (1)	25.32	33.92	27.36	32.84	25.15	27.60	28.16	25.56	28.12
♂ S. Lodging	- As inbreds (2)	12.58	9.52	8.14	14.28	6.38	18.14	17.62	16.44	9.16
	- In hybrids (3)	18.10	19.88	17.94	19.74	20.43	17.51	13.78	19.14	19.25
S. Rot rating	- As inbreds (4)	3.47	3.15	3.02	4.02	2.42	2.30	2.32	2.45	2.94
	- In hybrids (5)	2.98	2.95	3.24	3.06	3.08	2.99	3.04	3.09	2.93

2-200 maturity

		W77A	W357	A90	CH9	WL5JR	W33	W79A	A498
♂ S. Lodging	- As inbreds (6)	9.32	3.35	2.15	5.15	4.16	12.52	5.66	10.92
	- In hybrids (7)	21.46	19.97	24.57	22.62	25.08	19.80	23.98	20.10
S. Rot rating	- As inbreds (8)	4.12	2.00	4.18	1.74	3.52	4.64	3.64	4.66
	- In hybrids (9)	2.38	2.02	2.03	1.99	2.18	2.38	2.81	2.34

5-500 maturity

		W22	W69	B8	OH43E	MS129	W187R	W23	1289	Oh28
♂ S. Rot	- As inbreds (10)	6.90	0.00	77.70	46.20	5.50	63.70	94.50	100.00	93.70
	- In hybrids (11)	59.51	47.68	94.80	46.28	46.11	68.86	60.01	59.98	53.45
♂ S. Lodging	- As inbreds (12)	5.10	1.60	8.30	0.80	0.00	0.80	13.30	12.50	1.70
	- In hybrids (13)	13.68	11.08	25.91	11.31	18.64	27.32	29.94	32.99	21.29
S. Rot rating	- As inbreds (14)	1.81	2.90	3.55	3.38	3.59	3.09	3.90	3.85	3.80
	- In hybrids (15)	2.62	2.69	3.05	2.72	2.99	2.79	3.47	2.83	3.20

7-200 maturity

		B41	BL4	CL03	K757	R109B	38-11	Mo940	08420	E55	KL59
♂ S. Rot	- As inbreds (16)	26.66	52.06	25.73	56.16	32.77	26.62	48.88	77.50	44.49	32.77
	- In hybrids (17)	43.77	37.39	47.39	51.82	26.18	38.46	60.38	67.18	42.45	25.41
♂ S. Lodging	- As inbreds (18)	7.37	10.70	14.94	20.92	17.42	18.05	40.45	24.24	23.29	20.72
	- In hybrids (19)	19.64	12.55	21.76	30.35	16.66	33.54	50.00	33.94	30.38	20.87
S. Rot rating	- As inbreds (20)	3.11	3.29	2.95	4.09	3.21	3.42	4.01	4.36	3.06	3.06
	- In hybrids (21)	2.45	2.57	2.32	2.77	2.79	2.82	2.80	3.25	2.50	2.54

(1) Morden, Man.;

(2) Mich., N. Dak.

(3) Morden, Man., Mich., N. Dak.

(4) Winnepeg, Man., Morden, Man., Mich.

(5) " " " " " "

(6) Mich., N. Dak.

(7) " " " " " "

(8) Mich., Madison, Wis.

(9) " " " " " "

(10) Indiana

(11) Ohio

Table 20. Performance of 100 maturity inbreds in hybrid combination (average of all hybrids in a set of diallel crosses containing the inbred).

Character	Location	V3	Inbred							
			ND203	WD	SD48	ND230	CMD5	W15	W103	ND283
% S. Rot	M. Man.	25.3	33.9	27.6	32.8	25.2	27.6	28.2	25.6	28.1
% Lodging	M. Man.	8.6	17.6	9.4	18.7	12.6	8.9	10.0	19.1	11.3
"	Mich.	16.8	15.8	12.5	12.8	10.5	11.1	8.8	7.9	11.0
"	N.D.	29.0	26.2	30.2	27.7	38.5	33.0	23.8	30.8	36.3
Yield	W. Man.	48.3	41.8	41.6	47.2	44.8	45.2	48.3	47.1	44.1
"	M. Man.	41.4	48.9	45.2	47.2	47.6	47.0	46.2	45.5	46.3
"	Mich.	61.8	42.6	53.4	48.3	46.9	52.6	51.6	52.2	50.4
"	N.D.	53.4	58.8	60.8	59.4	60.7	61.7	57.9	61.0	59.0
S. Rot Rating	W. Man.	3.78	3.39	3.71	3.96	3.70	3.49	3.60	3.71	3.70
"	M. Man.	2.42	2.61	2.73	2.32	2.24	2.41	2.54	2.62	2.30
"	Mich.	2.72	2.88	3.22	2.88	3.32	3.04	3.00	2.94	2.80

Table 21. Performance of 200-300 maturity inbreds in hybrid combination (average of all crosses containing the inbred in a set of diallel crosses).

Character	Location	Inbred							
		W37A	W357	A90	CH9	W153R	W33	W79A	A498
% Lodging	Mich.	8.2	4.0	1.4	5.3	9.9	7.9	9.6	8.5
"	N.D.	34.7	36.0	47.8	40.0	40.2	31.7	33.4	31.7
Yield	Mich.	91.1	85.0	82.0	96.8	89.1	78.8	76.1	71.9
"	N.D.	72.7	74.5	71.2	73.0	74.4	70.8	70.0	74.6
S. Rot Rating	Mich	3.27	2.86	2.84	2.90	3.10	3.13	3.59	2.90
"	M. Wis.	3.90	3.21	3.24	3.07	3.44	3.99	4.37	4.10

Table 22. Performance of 500-600-maturity inbreds in hybrid combination (average of all crosses containing the inbred in a set of diallel crosses).

Character	Location	Inbred								
		W22	WF9	E8	Oh43E	BS129	W187R	W23	L289	Oh23
% S. Rot	Ohio	59.5	47.7	54.8	46.3	46.1	63.9	60.0	60.0	53.5
% Lodging	Ind.	18.5	10.3	34.6	14.6	26.5	40.8	42.7	49.4	32.3
"	Mich.	3.6	2.6	7.8	3.4	1.5	2.6	6.8	4.0	2.1
"	Ohio	19.5	20.4	35.3	15.8	28.0	38.6	40.4	45.7	29.5
Yield	Ind.	119.3	128.0	109.2	123.9	124.1	125.4	106.0	123.3	119.4
"	Mich.	73.0	70.6	76.4	69.6	63.8	65.5	67.0	64.3	60.0
"	Ohio	111.8	105.0	93.1	111.6	109.7	110.6	99.1	105.8	110.7
S. Rot Rating	Ill.	2.22	2.52	3.38	2.81	2.90	2.48	4.02	2.64	3.30
"	Ind.	3.59	3.39	4.31	2.98	3.78	4.34	4.62	4.06	4.20
"	Mich.	1.85	1.85	1.99	1.60	2.49	1.80	2.58	1.86	2.40
"	Minn. ^{a/}	3.46	3.52	3.78	3.65	3.93	3.61	3.96	3.74	3.90
"	Minn. ^{b/}	1.55	1.66	1.42	1.95	1.64	1.26	1.92	1.56	1.70
"	Ohio	3.06	3.15	3.44	3.29	3.14	3.62	4.08	3.12	3.70
^{a/} Diplodia ^{b/} Gibberella										

^{a/} Diplodia ^{b/} Gibberella

Table 23. Performance of 700-800 maturity inbreds in hybrid combination (average of all crosses containing the inbred in a set of diallel crosses).

Character	Location	Inbred									
		B41	B14	G103	K757	R109B	33-11	No94Q	Qs420	H55	K159
% S. Rot	Ill.	35.9	47.4	57.4	63.5	33.1	68.1	70.8	83.9	45.3	50.9
"	Ia.	51.8	33.9	47.8	54.4	34.4	76.6	76.6	80.6	50.8	51.8
"	Mo.	36.0	66.3	71.0	77.9	44.0	81.9	85.6	83.6	88.0	72.9
"	Nebr.	3.3	2.0	13.3	11.4	1.2	7.3	8.4	25.7	3.1	3.5
% Lodging	Ill.	15.4	9.5	27.6	41.0	26.9	41.8	62.3	28.4	24.3	27.5
"	Ind.	15.5	10.8	26.8	41.3	15.3	30.8	53.6	35.5	24.6	25.2
"	Ia.	41.3	27.9	37.4	50.3	30.3	56.0	78.1	58.6	52.3	50.8
"	Ky.	10.1	4.6	7.0	18.7	12.7	15.2	16.3	16.1	10.5	9.7
"	Mo.	15.9	7.3	8.6	16.6	10.0	23.4	37.0	18.8	15.3	13.6
"	Nebr.	10.3	5.0	12.0	17.0	6.6	15.3	13.3	21.3	8.3	9.4
"	Va.	29.1	30.7	33.0	42.3	39.6	52.3	84.5	58.8	46.7	48.0
Yield	Ill.	92.8	84.0	92.0	63.6	82.9	83.7	35.0	73.0	38.2	86.6
"	Ind.	132.2	120.5	123.5	81.4	105.0	122.8	112.5	106.7	131.6	130.9
"	Ky.	110.4	106.2	117.8	135.1	116.2	114.5	109.6	103.3	117.4	118.4
"	Mo.	93.5	90.7	95.9	85.8	92.0	93.6	89.3	88.7	95.4	96.2
"	Nebr.	127.2	111.6	124.0	110.1	96.3	121.4	114.7	113.0	124.9	123.6
"	Va.	118.8	104.5	121.8	100.7	103.6	103.7	109.7	103.1	105.7	103.4
S. Rot Rating	Ill.	3.09	3.34	2.98	4.17	3.34	4.32	4.36	5.52	3.06	3.16
"	Ind.	3.74	3.83	3.57	4.08	3.56	3.77	4.13	5.17	4.00	4.01
"	Ia.	1.36	1.47	1.69	1.12	1.11	1.40	1.49	1.40	1.49	1.44
"	Mo.	3.56	3.82	3.51	4.30	3.60	3.96	3.63	3.94	3.42	3.48
"	N. Car.	2.48	2.69	2.22	2.61	3.07	2.71	2.78	2.67	2.99	3.00
"	Ohio	2.43	2.09	2.03	3.32	2.94	2.31	2.48	2.91	2.33	2.39
"	Va.	0.56	0.73	0.26	1.19	1.86	1.30	0.87	1.13	0.68	0.70

Table 24. Correlation coefficients measuring the similarity of varietal reaction in various paired comparisons in 1961.

No.	Comparison	Correlation coefficients between indicated paired combinations as numbered in column 1 within inbreds or hybrids of each maturity group.										
(100 maturity inbreds, 7df, minimum $\pm$ 5% .67 1% .80)												
1	% Lodg.	1	2	3	4	5						
2	"	-	.40	.77	.30	.56						
3	"	.40	-	.54	.76	.50						
4	S. Rot Rating	.77	.54	-	.54	.36						
5	"	.30	.76	.54	-	.16						
6	"	.56	.50	.36	.16	-						
(100 maturity hybrids 34df, minimum $\pm$ 5% .34 1% .43)												
1	% S. Rot	1	2	3	4	5	6	7	8	9	10	11
2	% Lodg.	-	.22	-.14	-.11	.02	.52	-.28	-.21	-.07	-.01	-.13
3	"	.22	-	-.20	.17	-.06	-.16	-.03	.02	.17	-.06	-.02
4	"	-.14	-.20	-	-.23	-.13	-.32	-.07	-.17	-.34	-.03	-.18
5	"	.11	.17	-.23	-	-.04	-.25	.01	.48	-.01	-.17	-.23
6	Yield	.02	-.06	-.18	-.04	-	.06	.22	-.33	.22	-.16	-.15
7	"	.52	.16	-.32	-.25	.00	-	-.16	-.18	.06	.00	.05
8	"	-.28	-.03	-.07	.01	.22	-.16	-	-.12	.47	.03	.17
9	"	-.21	.02	-.17	.48	-.33	-.16	-.12	-	-.15	-.05	.26
10	S. Rot Rating	-.07	.17	-.34	-.01	.22	.05	.47	-.15	-	.04	.21
11	"	-.01	-.06	.03	-.17	-.16	.00	.03	-.05	.04	-.07	-
12	"	-.13	-.02	-.18	.23	-.15	.05	.17	.26	.21	.07	-
(200-300 maturity inbreds 6df, minimum $\pm$ 5% .71 1% .83)												
1	% Lodg.	1	2	3	4							
2	"	-	-.59	.28	.36							
3	"	-.59	-	-.27	-.58							
4	S. Rot Rating	.28	-.27	-	.53							
5	"	.86	-.68	.53	-							

Table 24. Continued

(200-300 maturity hybrids 26df, minimum $\bar{x}$ 5% .37 1% .43)

	1	2	3	4	5	6
1 % Lodg.	-	-	-	-	-	-
2 "	-	-	-	-	-	-
3 Yield	-	-	-	-	-	-
4 "	-	-	-	-	-	-
5 S. Rot Rating	-	-	-	-	-	-
6 "	-	-	-	-	-	-

(500-600 maturity inbreds 7df, minimum $\bar{x}$ 5% .67 1% .80)

	1	2	3	4	5	6	7	8
1 % S. Rot	-	-	-	-	-	-	-	-
2 % Lodg.	-	-	-	-	-	-	-	-
3 S. Rot Rating	-	-	-	-	-	-	-	-
4 "	-	-	-	-	-	-	-	-
5 "	-	-	-	-	-	-	-	-
6 "	-	-	-	-	-	-	-	-
7 "	-	-	-	-	-	-	-	-
8 "	-	-	-	-	-	-	-	-

g/ Diplodia b/ Gibberella

(500-600 maturity hybrids 34df, minimum $\bar{x}$ 5% .34 1% .43)

	1	2	3	4	5	6	7	8	9	10
1 % S. Rot	-	-	-	-	-	-	-	-	-	-
2 S. Rot Rating	-	-	-	-	-	-	-	-	-	-
3 "	-	-	-	-	-	-	-	-	-	-
4 "	-	-	-	-	-	-	-	-	-	-
5 "	-	-	-	-	-	-	-	-	-	-
6 "	-	-	-	-	-	-	-	-	-	-
7 "	-	-	-	-	-	-	-	-	-	-
8 % Lodg.	-	-	-	-	-	-	-	-	-	-
9 "	-	-	-	-	-	-	-	-	-	-
10 Yield	-	-	-	-	-	-	-	-	-	-
11 "	-	-	-	-	-	-	-	-	-	-
12 "	-	-	-	-	-	-	-	-	-	-
13 "	-	-	-	-	-	-	-	-	-	-

g/ Diplodia b/ Gibberella

Table 24. Continued

		(700-800 maturity hybrids 43df, minimum $\bar{x}$ 5% .29 1% .38)											
		1	2	3	4	5	6	7	8	9	10	11	12
1	% S. Rot	Ill.	.73	.65	.59	.60	.50	-.05	.39	.18	.20	.27	.66
2	"	Ia.	.73	.65	.41	.58	.43	-.07	.19	.20	.22	.24	.66
3	"	Mo.	.65	.69	.45	.36	.22	-.04	.01	.13	.15	.07	.52
4	"	Nebr.	.59	.41	.45	.55	.64	.09	.20	.00	.35	.05	.33
5	S. Rot Eating	Ill.	.60	.53	.36	.55	.72	-.07	.50	.10	.64	.44	.39
6	"	Ind.	.50	.43	.32	.64	.72	-.04	.21	.14	.64	.18	.19
7	"	Ia.	-.05	-.07	-.04	.09	-.07	-.04	-.32	-.09	-.22	-.08	.04
8	"	Mo.	.39	.19	.01	.20	.50	.21	-.32	.15	.24	.37	.08
9	"	N. Car.	.18	.20	.13	.00	.10	.14	.49	.15	.12	.35	.15
10	"	Ohio	.20	.22	.15	.36	.64	.64	.22	.24	-	.35	.08
11	"	Va.	.27	.24	.07	.05	.44	.13	.03	.37	.35	-	.14
12	% Lodg.	Ill.	.66	.66	.52	.33	.39	.13	.03	.15	.08	.14	.82
13	"	Ind.	.03	.62	.54	.39	.41	.33	.00	.21	.20	.05	.64
14	"	Ia.	.47	.80	.47	.23	.43	.33	-.03	.01	.20	.09	.62
15	"	Ky.	.49	.64	.45	.45	.51	.32	-.07	.14	.21	.39	.57
16	"	Mo.	.24	.43	.22	.15	.33	.25	-.07	.07	.11	.20	.58
17	"	Nebr.	.55	.59	.44	.53	.57	.44	.09	.19	.02	.35	.74
18	"	Va.	.54	.65	.43	.29	.43	.33	.01	.02	.22	.23	.26
19	Yield	Ill.	-.02	.03	.08	-.31	-.33	.37	.14	-.14	.05	-.45	-.14
20	"	Ind.	-.03	.03	.19	-.16	-.43	.26	-.19	-.13	-.56	.33	.05
21	"	Ky.	.19	.21	.19	-.12	-.23	.25	-.22	.01	-.34	-.06	-.10
22	"	Mo.	.10	.16	.14	-.12	-.16	-.24	-.09	-.06	-.22	-.10	-.31
23	"	Nebr.	-.05	.24	.19	-.13	-.18	.25	.24	-.31	-.29	-.31	-.37
24	"	Va.	-.08	.11	.14	-.09	-.26	.13	-.13	-.24	-.35	-	-

Table 25. Correlation coefficients measuring similarity of varietal reaction in various paired comparisons using data from all locations in 1961.

Paired Comparison		r	n	Tabular r	
				$\frac{5\%}{1\%}$	$\frac{1\%}{.1\%}$
% S. rot and S. rot rating - 100 maturity hybrids		-.119	36	.330	.424
" 5-600 " inbreds		.785*	9	.666	.798
" " " hybrids		.135	36	.330	.424
" 7-800 " inbreds		.817**	10	.632	.765
" " " hybrids		.804**	45	.294	.380
" all " inbreds		.718**	19	.456	.575
" " " hybrids		.251**	117	.182	.238
" " strains		.384**	136	.169	.221
Lodging and S. rot rating 100 maturity inbreds		.145	9	.666	.798
" " " hybrids		-.058	36	.330	.380
" 2-300 " inbreds		.593	8	.707	.834
" " " hybrids		-.088	28	.374	.478
" 5-600 " inbreds		.312	9	.666	.798
" " " hybrids		.464**	36	.330	.424
" 7-800 " inbreds		.573	10	.632	.765
" " " hybrids		.998**	45	.294	.380
" all " inbreds		.252	36	.330	.424
" " " hybrids		.381**	145	.163	.214
" " strains		.164*	181	.146	.192
S. rot rating and yield 100 maturity hybrids		.364*	36	.330	.424
" 2-300 " "		-.554**	28	.374	.478
" 5-600 " "		-.611**	36	.330	.424
" 7-800 " "		.063	45	.294	.380
" all " "		-.208*	145	.163	.214
S. rot rating, inbreds with hybrids 100 maturity		.083	9	.666	.798
" 2-300 "		.481	8	.707	.834
" 5-600 "		.684*	9	.666	.798
" 7-800 "		.846**	10	.632	.765
" all "		.781**	36	.330	.424

Table 26. Correlation Coefficients between Various Characteristics for the 1961 North Central Cooperative Stalk Rot and Stalk Lodging Study conducted at Columbia, Missouri. (Exp. 25 and D-93).

Character	Dead pnts. 9/14	Dead pnts. 9/22	Dead pnts. 10/7	Dead pnts. 10/14	Dead pnts. 10/21	Stalk lodged pnts. 10/21	Leaf blight rating	Field weight	Grain moisture	Flowering date	Dip. rating (Ill. method)	Dip. rating (Mc. method)
Dead pnts 9/14	-	.52**	.46**	.30	.22	.22	-.12	-.11	.02	-.02	-.02	.01
" 9/22		-	.95**	.83**	.74**	.48**	.17	-.20	.47**	.10	.12	.16
" 10/7			-	.90**	.83**	.44**	.13	-.20	.52**	.10	.19	.21
" 10/14				-	.96**	.33*	.10	-.07	.54**	.18	.04	.11
" 10/21					-	.26	.11	-.05	.50**	.13	.01	.09
Stalk lodged pnts. 10/21					-	-	.32*	-.28	.52**	.37*	.09	.21
Leaf blight rating						-	-	-.51**	.47**	.06	.12	.28
Field weight						-	-	-	-.37*	-.05	-.32*	-.45**
Grain moisture						-	-	-	-	.33*	.24	.32*
Flowering date						-	-	-	-	-	-.26	-.21
Dip. rating (Ill. method)						-	-	-	-	-	-	.83**
" (Mc. method)						-	-	-	-	-	-	-

* Significant at 5% level

** Significant at 1% level

Dr. Hooker also presented information on two new sources of resistance to *Helminthosporium turcicum*. These sources of resistance are characterized by (1) a chlorotic lesion, (2) an extended incubation period and delay of sporulation, and (3) a smaller lesion type. In both cases resistance appears to be due to a single dominant gene. Resistance has been tested against 71 isolates in the greenhouse and resistance holds for all isolates tested. These sources of resistance are currently being transferred to 26 standard lines by the back-cross technique.

Mr. Hoppe showed pictures of the stalk rot inoculation plots at Madison illustrating the relation between susceptibility to artificial inoculation and natural infection.

Dr. Zuber reported on the relationship between dead plants at varying dates, artificial inoculation ratings and other attributes. The results are presented in table 26.

Present and Future Status of Regional Tests

Cooperative regional tests have been the major reason for existence throughout much of the existence of NCR-2 and its predecessor groups. None of us would argue in general against the past value of these tests, if only because they have provided a basis for mutually-helpful regional cooperation. However, the present status of these tests gives cause for concern, and should be given close scrutiny by this group.

Present cooperative tests in the North Central region can be divided into three general groups:

1. Evaluation of new inbred lines derived from station breeding programs. These may take the form of three-way, single cross, or other tests.
2. Evaluation of hybrids proposed for practical production (nearly always double crosses).
3. Special cooperative research programs, such as the maturity test conducted a few years ago, or the current stalk-rot study.

Looking at each of these in turn, the following facts emerge:

1. Inbred line evaluation is still important, although this importance is decreasing in some states. Three-way cross tests give quick and useful indications of regional adaptation of new lines being produced by station programs. These tests should be continued in all maturity groups. Participation by all possible stations should be encouraged.
2. Double cross tests appear to be a "dead letter" in most maturity groups in the region. They are not being conducted at all in the 900 group, and on a relatively small scale in the other groups. Few hybrids ever receive the AES designation (none in 1960 or 1961) and those which are found worthy of this designation have little or no impact on the seed industry. The causes of this situation are fundamental. Of major importance are the trend to closed pedigrees and the reluctance of some states to give up the credit supposedly accruing from affixing the state or station designation to a recommended hybrid. These problems cannot be solved by any action feasible on the part of this committee. Therefore, regional testing of double crosses and the "AES" designation should immediately be discontinued.
3. Special cooperative tests have had no consistent history, and have varied in success. Problems of uniform data recording, summarization of data, and coordinated evaluation of the results

have been among those encountered. However, looking to the future, the actual purpose of this existence of this committee seems to lie primarily in the strengthening of this phase of regional cooperation. Perhaps it will be found necessary to organize special regional projects in some of this work, but it seems only logical that the present committee could take more leadership in planning cooperative investigations which would have real scientific merit and which would be of wide interest. One of these is the need already shown for an expanded cooperative program in investigation of the inheritance of major agronomic characteristics. Another might be an evaluation of "exotic" germ plasm sources. There are many more.

In summary, the cooperative tests which have been the mainstay of this committee's program for many years are to a considerable extent outmoded by recent trends in the research programs of the cooperating stations and in the maturing hybrid seed corn industry. Without discarding the valuable portions of our program, we should concentrate our planning and cooperative efforts on those phases of research which appear most likely to yield useful results for the future.

Earl R. Leng

Dr. Leng MOVED "That the North Central Corn Breeding Research Committee recommend to the North Central Directors that the regularly organized uniform testing of double-cross hybrids for the purpose of assigning AES designations be discontinued." The motion was seconded by Neal. Motion passed unanimously.

It was MOVED by Leng "That the North Central Corn Breeding Research Committee recommend to the North Central Directors that other appropriate forms of cooperative testing be continued wherever desirable. Seconded by Zuber. Motion passed unanimously.

The meeting was adjourned at 12:00 noon.

AFTERNOON SESSION, MARCH 7

The afternoon session was devoted to invitational reports.

Professor R. A. Brink, Department of Genetics, University of Wisconsin, Madison presented a very interesting summary of his studies on "Paramutation at the R Locus in Corn". The summaries of other reports presented follow.

Breeding for Resistance to the Second Brood of the European Corn Borer

It has been recognized for a good many years that the biological relationship between the corn borer and the corn plant is not the same for the different broods that occur annually in various parts of the United States. The larvae of the first or early summer brood are in the initial stages leaf blade feeders when corn is in the whorl stage of growth. The exposed injury varies from pin point to elongated lesions. The more advanced larvae feed on or in parts of the leaf sheath, midrib and stalk resulting in partial girdling and loss in leaf function.

The second and subsequent broods are normally prevalent when corn has developed beyond the vegetative stage of growth and is usually in the pollen shedding or "ear set" stage of development. Under these conditions the young larvae feed on ear parts or pollen accumulations. The larger larvae feed on sheath parts and invade the stalk and ear shank.

From the standpoint of loss, the first brood has been the most important in much of the Corn Belt. Losses due to lodging and ear dropping have been to a greater extent associated with the second brood. With this background of the problem the approach has been toward breeding for resistance to the first brood, which can be very effectively done, and for resistance to stalk breakage and ear dropping to the second brood. In the over-all program this is still a sound approach for most of the North Central Region.

In late maturities in the multiple generation areas of the South, the second brood assumes more importance. This situation has led to more thorough screening of inbred lines for second brood resistance factors.

For several years a series of inbred lines have been tested under a uniform second brood infestation applied when each entry was actively shedding pollen and highly acceptable for the establishment of newly hatched larvae. The records consisted of counts of cavities in the ear shank and in four internodes above and below the primary ear bearing node. The accompanying table gives the results for 45 inbred lines tested in 1961. Several released and experimental lines have consistently shown a very effective level of resistance under a uniform application of infestation. B52 has each year stood at the top of the list in having the lowest number of stalk and shank cavities. Some of the most commonly used inbred lines are highly susceptible to stalk and shank invasion.

Methods for evaluating second brood resistance have been given a good deal of attention for several years. Under a uniformly applied infestation there are high positive correlations between cavities in the four internodes above and below the primary ear node and in the ear shank. A count of cavities in the four internodes above or below the ear node and in the shank gives an adequate evaluation for relative second brood resistance.

F. F. Dicke

Table 27. Infestation index based on number of stalk and shank cavities in inbred lines of field corn tested for resistance to second-brood European corn borer, Ankeny, Iowa, 1961. G. R. Pesho, F. F. Dicke, and W. A. Russell

Inbred	Mean No. cavities	Inbred	Mean No. cavities
B52	1.8	B53	6.9
(Syn.A)97...1 (Plot 1294)	3.5	B57	6.9
(41.25048 x B14/2)-10-1-2-		B56	6.9
(Plot 1291)	3.7	W64A	7.0
R101	3.9	C1.31A	7.4
*(Pa. Int.Syn.)-7-3-2-(Plot 1315)	4.2		
		B46	7.6
HD2187	4.3	B49	7.6
*(N32 x B14/2)-1-30-2-1-3	4.7	A257	7.8
(Syn.B)150-1...1 (Plot 1300)	4.8	Oh45A	8.0
B55	5.0	Oh51A	8.0
(Pa. Int.Syn.)-18-1-2-(Plot 1318)	5.1		
		A570	8.2
B14	5.3	WF9	8.2
B51	5.4	R168	8.4
WF9(60:1375-1)	5.5	B50	8.4
(Syn. B)273...1 (Plot 1306)	5.6	(Pa.Early Syn.)-10-4-1-(Plot	
(Syn. B)150-3...2 (Plot 1303)	5.6	1309)	8.6
C103	5.7	(B14 x N32/2)-1-45-1	8.6
HD2479	5.9	Hy	9.4
B42	6.0	(Syn.B)210...1-(Plot 1304)	10.0
(N32 x B14/2)-1-30-4	6.0	Oh43	10.0
N22A	6.1	M14	10.9
B54	6.3	W22	12.1
B37	6.5	WF9(60:1416-1)	13.5
A239	6.5		
B38	6.7	Mean	6.8
(B18 x A73)-48-1-(Plot 1849)	6.8		

LSD = 2.8 @ 5%

*Heavy loss of stalk portions above ear due to damage other than corn borer damage.

Current Status of High-Amylose Corn

Problems confronting the breeding of high-amylose corn consist of (1) present ceiling of 80% amylose starch, (2) lower yield of high-amylose hybrids, (3) lower test weight of high-amylose hybrids, (4) poorer germination under conditions of stress, and (5) occurrence of an "unknown shrunken type" of kernel among some strains of high-amylose corn.

Up to the present, strains of high-amylose corn have not been found that will exceed the 80% amylose level. Some starch chemists have suggested a certain amount of amylopectin may be necessary in the synthesis of amylose starch and that it may never be possible to breed a corn with 100% amylose starch. Several studies have suggested that a modifier-gene complex in the presence of the recessive *ae* gene accounts for the range in amylose from 47 to 80%. If these modifiers are additive and their frequency can be increased by selection, the recurrent selection technique should offer the best opportunity of breaking the 80% amylose barrier.

Acre yields of high-amylose hybrids average from 15 to 25% less than than normal-dent hybrids. Test weight per bushel is about 4 pounds less for the high-amylose hybrids compared with the normal-dent hybrid. These differences have been associated with the smaller kernel size of high-amylose corn. Selection for larger kernels and kernels with higher density may overcome these difficulties.

Poorer germination and field stands have been noted under cold-wet soil conditions. This may be due to breaks in the pericarp as high-amylose kernels shrink causing the pericarp to appear somewhat like a "blister" and resulting in breaks which allows an easy entry for micro-organisms causing seedling diseases.

An "unknown type of shrunken" kernel appears quite frequently in certain strains of high-amylose corn. These kernels appear somewhat like the brittle and shrunken types. The amylose content for the "shrunken types" is about 47% compared with 65% for the full-tarnished kernels from the same strain. The "shrunken types" are light in weight thereby reducing grain yield and test weight. At this time it is not known whether these "shrunken types" are genetic or controlled by other factors.

The effect of different years and locations on amylose synthesis showed that environment of the growing season influences amylose synthesis. Average temperature and degree days were correlated with amylose content. In general, a negative correlation was found between amylose content and temperature. However, the difference in amylose content associated with locations was quite small indicating high-amylose corn can be grown anywhere in the Corn Belt.

Different levels of nitrogen and different plant populations had little effect on amylose content but a more pronounced effect on yield and test weight per bushel. In general, as the nitrogen level was increased the amylose content increased. Amylose content decreased as plant populations were increased.

The present commercial production of high-amylose corn is being used mainly by the fiber-glass industry in the spinning, weaving, finishing, and fabrication of fiber-glass products. Small amounts of high-amylose starch is being used by the paper industry where it shows promise as a wet end additive wherein it gives good retention and high wet strength paper. The use of high-amylose starch by industry for casting films appears not to have gone beyond the exploratory stages.

The commercial processing of high-amylose corn by the wet corn millers does not present any particular difficulties. The yield of starch is somewhere between 20 and 25 lbs. per bushel compared with 30 lbs. for normal dent corn. The current price for 60% high-amylose starch is 15¢ per pound, compared with ordinary corn starch at 5½¢ per pound.

The amylose content desired by industry seems to be that no one amylose content will make all customers happy. The 60% amylose starch appears to please the fiber-glass manufacturers. However, a high amylose content, perhaps in the range of 80 to 90%, may be necessary for the film, fiber, and plastics industries.

The amount of high-amylose corn to be used by industry in the future depends on; if, when, and how fast the film, fiber, and plastic manufacturers develop a use for high-amylose starch. The starch chemists appear to be optimistic about this phase. In event the film, fiber, and plastic use for high-amylose starch materializes the high-amylose corn production could become quite sizeable, until that time, high-amylose corn production is not likely to be more than a speciality crop, somewhat like waxy maize.

M. S. Zuber

Corn Silage with "high sugar" Stalks

As noted in table 28, dry matter yields were lower on hybrids where grain formation was prevented than when grain was formed. Refractometer readings of stalk juice indicated that the percent sugar was over twice as high when grain formation was prevented as compared to conventional silage. Readings were made when silage contained about 30% dry matter.

Table 29 compares the chemical analysis and feeding value of hybrids when grain formation was prevented with hybrids when grain formation was permitted. (Courtesy Dr. John Bratzler and Dr. John Washko, Pennsylvania State University). The percent crude protein and ether extract was greater and the percent crude fiber was less in conventional silage as compared to silage where grain formation was prevented. While some advantage has been attributed to silage from high stalk sugar hybrids where grain formation did not occur as compared to conventional silage, these data indicate no such advantage. Total dry matter yield was highest with silage hybrids when grain production was permitted.

Refractometer readings have been made on conventional double cross hybrids at comparable stages of maturity in an attempt to detect hybrid differences. Significant differences although small, were detected between hybrids of similar maturity. Several correlations between refractometer readings of these double cross hybrids with stalk lodging resistance in adjacent experiments were all positive but non-significant when differences in maturity were eliminated.

Ensilage feeding trials with "high stalk sugar" hybrids indicate no advantage of these hybrids over conventional silage hybrids where grain development was permitted.

In view of severe stalk lodging problems in some years, it is suggested that the relationship of stalk sugars with stalk lodging resistance merits further investigation.

W. I. Thomas

Table 28. Comparison of refractometer readings and dry matter production of hybrids in the presence and absence of grain formation.

Year	Location	Hybrid	Silage Yield Tons/acre	Refractometer reading
1961	Centre County	Pa 602A		
		Barren	8.0	15.8
		Grain	11.3	7.3
1961	Lancaster County	Pa 825		
		Barren	15.7	16.3
		Grain	18.6	7.3
1961	Lancaster County	HS 50		
		Barren	15.9	16.3
		Grain	18.3	6.5
1960	Centre County	Pa 507		
		Barren	13.0	12.3
		Grain	14.6	6.4

Table 29. Chemical composition and energy values of silages from different treatments (Penna., 1960 and 1961).

Hybrid	D.M.	C.P.	C.F.	E.E.	Ash	N.F.E.	Dig.D.M.	Dig Energy
	%	%	%	%	%	%	%	%
Pa 602 (grain)	22.3	8.7	20.5	3.2	3.6	64.0	74.3	71.9
HS 50 (barren)	19.7	6.9	26.4	2.6	3.4	60.7	74.0	73.1
Pa 507 (grain)	26.5	8.8	20.4	2.8	3.7	61.0	70.6	69.0
Pa 507 (barren)	27.0	8.6	23.8	1.8	4.7	61.2	66.5	64.4
U.S. 13 (grain)	29.5	8.4	17.9	4.8	3.9	64.9	70.1	69.5
Ill.Hi Oil (grain)	28.8	7.8	20.9	3.2	4.3	63.8	70.3	69.4

European Corn Germ Plasm and Its Potential Significance In Our Breeding Programs

South-central and southeastern Europe is at present second only to the U. S. "Corn Belt" as a concentrated, high-producing area of corn culture. Particularly in northern Italy, Hungary and the Balkan countries, corn and wheat are the predominating field crops. Crop rotations often are based on a corn-wheat sequence, particularly in northern Italy and the Pannonian Plain of Hungary, Yugoslavia, and western Rumania.

Modern hybrids were introduced into the area after World War II, and are rapidly displacing the older open-pollinated varieties. However, much of the locally-adapted germ plasm is still available, and can be preserved and utilized if proper action is taken promptly.

The race and variety picture in the area has never been investigated on an integrated, up-to-date basis. Preliminary surveys in 1960 and 1961 indicate the presence of at least eleven races or "race groups". More detailed studies undoubtedly will establish the presence of several additional races.

Corn first was introduced into the area in the 1500's (16th century) by Venetian traders and the Turks. Since most of the area was under Turkish control at the time, the common names for corn in the area generally have Turkish connections. The original source of these early introductions is not known; they have previously been assumed to be from the West Indies, but none of the presently-recognized West Indian races has been found in south-eastern Europe.

Subsequently, corn has entered the area from several widely-separated New World areas, by various channels. In the major corn growing areas of southcentral Europe, "Corn Belt Dent"-type varieties have predominated since about 1910, although some of the other races are widely distributed.

Following is a preliminary listing of the tentatively-identified races, their presumed original sources, and the probable first dates of introduction into south-central or southeastern Europe.

<u>Race or "race group"</u>	<u>Source</u>	<u>Date</u>
1. Small-eared flint	Andes (?)	1500 (?)
2. Small-kerneled flint	South America (?)	1600-1700's
3. 8-row (Northern) flint	N.E.; U.S.A.	1800's
4. "Mediterranean" flint	(?)	(?)
5. Derived flints	Local	1600-present
6. Many-row (Southern ?) dent	Southern U.S.	early 1800
7. Large-kerneled dent	U.S. or Mexico	1800's
8. Beaked ("Rostrato") dent	Mexico (?)	(?)
9. Corn Belt Dent	Central U.S.	1890-1910
10. Flint-dent derivatives	Local	1800-present
11. Modern hybrids	Central U.S.	1945-present

There are very important reasons for U.S. corn breeders, particularly in the North-Central and Northeastern regions, to be interested in this material, these are:

1. The older "indigenous" forms have been reproductively isolated from U. S. corn for 50 to over 400 years (depending on the race involved).
2. The European material is adapted to latitudes 40° - 48° North. Therefore there are no great problems of day-length reaction, etc., involved in utilizing this material in the northern and central parts of the United States.
3. This is the major remaining world source of open-pollinated germ plasm adapted to middle-latitudes.
4. Valuable and unique combinations of agronomic characters exist in this material.

Illinois is currently organizing a coordinated program of assembly, classification, preservation, and agronomic evaluation of European corn germ plasm. Cooperation by other corn workers in this program will be welcomed.

Earl R. Leng

MORNING SESSION, MARCH 8

The committee reconvened at 9:00 a. m. to consider the remaining sub-committee reports.

REPORT OF THE SUB-COMMITTEE ON UNIFORM TESTS IN THE 900
MATURITY SERIES

Cooperative trials of yellow three-way crosses were grown in 8 states in 1961. White three-way cross trials were grown in Missouri, Kentucky and Tennessee. Reaction to corn borer was evaluated at Ankeny, Iowa on both series of top-crosses. Summaries of these trials are reported in tables 30 and 31.

A diallel set of single crosses were grown in 1961 to evaluate sizing characteristics. Experiments were grown at Warsaw, Virginia; Lexington, Kentucky and Sikeston, Missouri. Summaries of the sizing data and analyses of variance for the combined experiments are presented in tables 32 and 33.

Three-way cross seed was not produced in this series in 1961 for testing in 1962. Seed of white and yellow 3-way crosses will not be produced in 1962 but will be delayed until 1963.

Performance evaluation of recently released station hybrids and candidates for release will be conducted in this series in 1962.

F. A. Loeffel, Chairman
P. J. Loesch
M. S. Zuber

Dr. Loeffel MOVED the acceptance of the report. The motion was seconded by Zuber and passed.

Table 30.

Summary of agronomic data recorded on cooperative 900 maturity white 3-way cross trials grown in 1961.

Pedigree	Acre yield		Moist. at harv. %		Lodging		Dropped		Ear ht.		Foliar Disease		Corn borer		Ear appear.		Stand %		Ears per 100 plants		Ear worm damage	
	bu.	1/	1/	1/	%	1/	%	2/	1/	ft.	3/	may.	4/	rating	3/	%	1/	3/	No.	3/	grade	3/
(Ky 211 x 33-16) x T115	116.1	19.7	0.2	17.6	0.5	4.4	2.5	7.0	2.2	95.8	172	2.2	7.0	2.2	95.8	172	2.2	2.2	2.2	2.2	2.2	2.2
"	T315	114.0	19.6	0.0	3.7	0.0	4.0	2.2	7.0	2.2	96.0	118	2.0	2.2	96.0	118	2.0	2.0	2.0	2.0	2.0	2.0
"	T331	117.1	18.7	12.4	7.7	0.2	4.0	3.0	6.0	2.0	97.1	123	2.0	2.0	97.1	123	2.0	2.0	2.0	2.0	2.0	2.0
"	T357	117.3	21.4	1.2	9.9	0.2	4.2	2.2	6.7	2.2	93.5	122	3.0	3.0	93.5	122	3.0	3.0	3.0	3.0	3.0	3.0
"	E184	120.9	19.4	1.5	25.3	0.0	3.9	2.5	6.7	3.0	98.0	118	2.5	6.7	98.0	118	2.5	2.5	2.5	2.5	2.5	2.5
"	K8425	119.4	16.4	1.2	12.5	0.3	4.2	3.0	6.0	3.0	97.4	120	3.0	3.0	97.4	120	3.0	3.0	3.0	3.0	3.0	3.0
"	K9515	120.6	17.9	0.8	14.3	0.0	3.9	4.0	6.3	2.8	98.7	138	2.5	6.3	98.7	138	2.5	2.5	2.5	2.5	2.5	2.5
"	CI66	123.5	21.0	0.0	6.9	0.5	4.2	2.2	6.3	2.2	98.2	103	1.5	6.3	98.2	103	1.5	1.5	1.5	1.5	1.5	1.5
"	K6	112.5	17.0	0.7	9.4	0.1	4.1	3.2	6.7	1.8	96.4	115	1.8	6.7	96.4	115	1.8	1.8	1.8	1.8	1.8	1.8
"	CI64	129.1	19.0	3.0	9.0	0.7	4.5	0.8	6.0	2.0	98.5	114	2.8	6.0	98.5	114	2.8	2.8	2.8	2.8	2.8	2.8
"	Ky 27	112.2	16.5	1.3	24.9	1.7	4.2	2.5	6.7	3.0	97.6	121	3.2	6.7	97.6	121	3.2	3.2	3.2	3.2	3.2	3.2
Total Mean		118.4	18.8	2.0	12.8	0.3	4.1	2.6	6.5	2.4	97.1	124	2.4	6.5	97.1	124	2.4	2.4	2.4	2.4	2.4	2.4

1/ Tennessee, Kentucky (2 locations), Missouri.

2/ Kentucky (2 locations), Missouri.

3/ Tennessee (1 = resistant, excellent or very light injury).

4/ Iowa (1 = resistant).

Kentucky Agricultural Experiment Station
University of Kentucky
Lexington, Kentucky

Table 31.
Summary of agronomic data recorded on cooperative 900 maturity yellow 3-way cross trials grown in 1961.

Pedigree	Acre yield		Moist.		Lodging		Dropped ears %	Ear ht. ft.	Foliar Disease		Corn borer rating	Ear rating	Stand %	Ears plants	Ear wt. lb.				
	bu.	1/	2/	3/	4/	%			g r a d e	may.						Ear Worm damage	g/	1/	5/
(B41xKy36-11)x K9022	101.9	24.6	4.9	12.2	0.2	4.1	2.5	2.0	77	6.7	2.8	95.4	99.0	.61					
"	R134	102.3	20.3	2.0	14.7	1.0	3.9	1.8	3.0	75	6.3	3.0	94.3	108.5	.50				
"	R196	95.9	18.3	5.6	8.9	0.3	4.0	2.5	4.2	74	6.7	3.1	93.9	104.0	.47				
"	T218	103.5	18.7	3.6	8.9	0.7	4.0	2.2	2.5	77	6.7	3.0	94.2	109.5	.48				
"	T222	109.5	22.9	8.6	13.5	0.2	3.9	1.5	1.0	75	6.7	2.5	94.5	116.0	.50				
"	T224	111.0	19.8	4.5	19.2	0.4	4.4	3.0	2.5	77	6.7	2.9	93.4	126.5	.52				
"	T458	102.5	21.4	3.6	11.5	0.1	3.5	2.0	0.6	76	6.7	2.9	96.2	120.5	.53				
"	T474	95.3	21.4	3.6	18.8	0.1	4.1	2.5	3.0	74	6.7	3.3	94.3	128.0	.44				
"	T490	104.0	21.8	5.8	15.3	0.2	4.3	1.5	2.0	76	7.0	3.0	94.5	122.0	.54				
"	T498	99.7	19.4	4.8	6.2	0.0	3.9	1.5	1.5	75	6.7	3.0	94.7	135.5	.47				
"	A441-5	105.1	24.4	7.9	12.3	0.0	3.9	1.2	1.1	76	6.7	2.7	96.0	120.5	.48				
"	Va 17B	101.1	21.1	6.2	9.3	1.7	3.6	1.0	2.0	75	6.7	3.0	93.2	110.5	.56				
"	Va 9709	102.0	21.7	8.5	11.2	0.2	3.9	0.4	3.5	76	6.5	2.8	93.2	103.5	.51				
"	CI44	103.5	23.0	1.3	10.2	0.6	4.0	0.5	2.8	76	6.7	3.0	95.3	121.5	.46				
"	Mo0225	101.5	24.3	4.8	12.2	0.0	4.0	0.5	2.8	77	6.3	2.7	93.2	112.5	.44				
"	Mo 6	100.9	24.4	6.4	11.8	0.2	4.2	1.2	2.5	78	6.7	2.9	94.3	111.5	.45				
"	CI21E	114.5	23.1	3.4	9.5	0.3	4.0	1.5	1.8	76	6.7	2.8	92.5	101.0	.62				
"	T8	98.8	21.6	6.6	12.4	0.0	4.1	0.4	3.5	75	5.7	3.1	94.8	109.5	.53				
"	CI38B	104.1	20.6	2.8	16.5	0.2	3.8	2.0	3.2	74	6.7	3.0	95.2	119.0	.46				
"	K201G	103.5	23.3	5.3	14.4	0.9	4.2	0.5	3.2	76	6.7	3.0	94.4	114.0	.50				
(K713)																			
"	(AKD 26	102.2	21.6	9.4	15.6	0.4	4.2	1.8	2.5	76	6.7	2.8	93.5	110.5	.43				
"	AKD 28	96.6	23.7	2.3	8.8	0.5	3.9	1.2	1.5	77	6.3	3.0	95.3	98.5	.39				
Ky 105	107.0	21.0	6.0	11.2	0.2	4.2	1.2	3.5	3.5	77	3.3	3.3	92.5	104.0	.52				
(T8xCI21E) (38-11xOh7B)																			
Mo. 916	113.6	21.3	6.0	8.2	0.0	3.8	1.5	3.0	3.0	76	6.7	3.1	95.1	115.0	.48				
(Mo6xCI21E) (Oh29xOh7B)																			
VPI 646	102.2	19.9	3.5	9.8	1.2	3.9	0.8	3.8	73		2.8		94.3	106.5	.50				
(WF9xT8) (38-11xCI03)																			
Total Mean	103.3	21.7	5.1	12.1	0.4	4.0	1.4	2.6	76	6.6	2.9		94.3	113.1	.50				

Table 31. (Cont'd.)

- 1/ Kentucky (2 locations), Tennessee, Georgia, Missouri (2 locations), Virginia, Oklahoma, Illinois (2 locations), Nebraska.
- 2/ Kentucky (2 locations), Tennessee, Missouri (2 locations), Virginia, Illinois (2 locations), Nebraska.
- 3/ Kentucky (2 locations), Tennessee, Missouri (2 locations), Virginia, Oklahoma, Illinois (2 locations).
- 4/ Kentucky (2 locations), Tennessee, Missouri (2 locations), Virginia, Oklahoma, Illinois (2 locations), Nebraska.
- 5/ Kentucky (2 locations), Missouri (2 locations), Illinois (2 locations), Nebraska.
- 6/ Kentucky (2 locations), Tennessee, Georgia, Missouri (2 locations), Virginia.
- 7/ Tennessee (1 = resistant or very light injury).
- 8/ Virginia, Oklahoma (number days from planting to mid silk).
- 9/ Iowa (1 = resistant).
- 10/ Tennessee, Georgia, Virginia, Oklahoma (1 = excellent).
- 11/ Kentucky (2 locations), Tennessee, Georgia, Missouri (2 locations), Virginia, Oklahoma, Illinois.
- 12/ Tennessee, Georgia.
- 13/ Georgia.

Table 32.
Summary of grading data recorded on the 900 maturity single-cross grading study compared at Harems, Virginia; Lexington, Kentucky and Sikeston, Missouri in 1961.

Entry No.	26/64		Test wt.	13-y Thickness				22-20/64 Length				24-18		Visual Grade
	%	%		26/64	22/64	20/64	18/64	17/64	16/64	30-34	20-30	64	%	
1	14.1	57.1	C121Exch7A	8.2	31.3	31.1	6.0	1.0	32.7	43.2	21.3	1.8	70.6	76.8
2	24.4	59.9	C121Exch13B	8.9	29.0	27.2	4.9	0.0	2.8	50.2	44.2	2.8	4.5	53.0
3	17.8	57.4	C121Exch13A	14.2	34.0	23.3	4.0	0.2	20.0	48.5	21.5	1.5	2.8	63.7
4	19.2	56.7	C121Exv31	11.2	33.7	27.1	4.6	1.0	30.2	39.7	28.0	1.2	3.3	71.9
5	19.3	56.5	C121Exx20IG	27.9	29.4	11.2	1.4	0.3	24.5	51.0	23.3	0.8	2.7	75.8
6	15.2	57.5	C121Exx36-11	33.8	11.5	1.2	0.0	0.0	19.5	44.2	33.2	3.2	3.6	74.1
7	16.2	59.5	Ch3AcT13B	8.7	33.4	30.0	3.8	0.0	4.5	46.5	40.7	5.7	4.9	77.3
8	13.1	59.1	Ch3AcT13A	8.2	35.1	30.0	5.1	0.0	9.7	60.5	26.7	3.2	3.9	70.2
9	15.4	57.9	Ch3Acv31	4.7	28.2	37.0	8.0	0.0	12.0	58.0	27.0	3.0	3.8	70.0
10	12.2	56.6	Ch3Acx20IG	14.7	39.5	21.4	3.0	0.2	14.0	57.2	27.5	1.2	3.5	71.3
11	13.6	57.4	Ch3Acx36-11	29.8	37.0	10.4	0.9	0.0	7.2	41.3	45.4	5.2	4.3	48.5
12	13.8	60.0	C138ExC131 A	9.3	31.2	31.7	6.3	0.0	1.3	49.5	43.5	5.7	5.4	72.2
13	24.1	59.6	C138Exv31	6.8	31.5	30.5	4.8	0.0	12.5	52.7	33.7	1.2	4.5	68.8
14	12.6	60.1	C138Exx20IG	17.9	38.8	22.5	2.7	0.0	3.2	52.0	41.2	3.7	5.4	79.2
15	13.6	60.0	C138Exx36-11	27.7	36.1	13.7	1.0	0.0	0.3	28.3	62.2	9.2	6.1	77.5
16	13.8	57.1	C131Axv31	13.5	31.8	24.6	5.6	2.0	29.3	47.3	20.7	0.7	2.7	71.9
17	17.2	58.2	C131Exx20IG	17.5	35.1	18.8	2.9	0.0	6.0	57.2	33.0	3.8	4.2	71.4
18	11.7	57.1	C131Axv36-11	29.1	26.4	9.7	1.3	0.0	5.3	60.2	31.5	3.0	3.9	65.2
19	16.4	56.9	v31Exx20IG	20.2	40.8	17.3	2.1	0.0	19.5	56.8	23.0	0.7	3.3	78.3
20	15.7	58.5	v31Exx36-11	25.4	36.7	13.6	1.1	0.0	6.2	53.8	37.3	2.7	4.4	75.6
21	12.9	57.1	C201Exx36-11	34.7	25.5	6.8	0.7	0.0	4.0	53.8	40.2	2.0	4.4	67.0
22	15.6	58.9	w2Ex36-11	1.4	14.9	41.9	16.2	0.0	21.8	43.0	29.8	5.3	4.0	58.2
23	14.9	55.6	w2ExCh7A	3.9	25.2	38.3	9.9	0.7	24.7	53.3	19.3	2.0	2.8	67.5
24	15.0	60.1	w2ExT8	13.3	40.9	26.6	2.6	0.2	8.8	49.0	41.0	1.2	4.2	80.7
Mean	15.6	58.1		16.1	32.7	23.3	4.2	0.2	13.3	49.9	33.1	3.0	3.9	72.0

Analyses of variance of measured attributes recorded on the 900 maturity single cross grading study compared at Warsaw, Virginia; Lexington, Kentucky and Sikeston, Missouri in 1961.

Source of variation	Fest. Vt.		24/64		24/64		22/64		20/64		18/64		34-33				
	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F			
DP	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F			
A Location	2	66.27	46.30	5,050.00	7.32	132,310.00	301.62	19,593.00	45.04	176,555.00	370.85	19,289.50	506.15	1.50	1.5	2,915.50	477.17
AR Reps within Loc	9	1.44		690.00		438.86		438.11		476.83		38.11		1.00		6.11	
B Hybrid	20	15.89	11.98	3,736.75	3.35	26,038.50	23.47	5,353.20	0.8	23,584.00	17.21	1,370.40	35.30	0.89	1.07	309.35	3.31
AB Hybrid x Loc	40	1.66	4.15	1,414.10	7.18	1,150.08	22.02	7,303.18	12.58	1,353.10	23.27	377.50	11.49	0.75	1.47	93.00	6.19
Error b	180	0.40		155.16		504.18		376.04		475.16		30.22		0.51		13.11	
L.S.D. .05		0.89		3.69%		6.29%		6.73%		6.09%		1.54%		2.00%		10.98%	
C.V.		1.03%		15.78%		28.0%		16.69%		18.71%		26.41%				58.28%	
Source of variation	30-36		25-30		22-26		Visual		24/64-18/64		> 30		> 24		> 33		
	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	MS	F	
DP	MS <td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	MS <td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td></td></td>	MS <td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td></td>	MS <td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td></td>	MS <td>F<td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td></td>	MS <td>F<td>MS<td>F<td>MS<td>F</td></td></td></td></td>	F <td>MS<td>F<td>MS<td>F</td></td></td></td>	MS <td>F<td>MS<td>F</td></td></td>	F <td>MS<td>F</td></td>	MS <td>F</td>	F	
A Locations	2	6562.00	78.52	13,154.50	115.03	208.00	45.71	134.50	17.3	6,152.50	9.73	16,247.00	162.29	17,861.00	223.00	4.26	8.02
AR Reps within Loc.	9	88.67		114.44		4.55		7.77		632.22		100.11		80.10			
B Hybrid	20	183.35	0.9	326.20	3.64	15.05	2.13	13.00	7.78	5,421.70	0.95	439.80	3.86	8,944.60	59.16	1.58	2.37
AB Hybrid x Loc.	40	207.40	49.05	89.70	2.60	7.08	2.87	1.67	1.95	5,694.13	13.53	114.08	2.47	1,511.83	10.13	1.45	1.69
Error b	180	42.28		32.09		2.43		0.64		420.75		46.11		149.29			
L.S.D. .05		18.20%		15.86%		4.40%		1.28%		5.77%		19.01%		3.42%			
C.V.		26.07%		34.20%		106.24%		23.31%		5.70%		21.41%		100.28%			

REPORT OF THE SUB-COMMITTEE ON THE 700-800 MATURITY SERIES

The 800 maturity double crosses were grown in Illinois, Indiana, Iowa, Kentucky, Missouri, Nebraska, Ohio and Oklahoma. Summarized data are presented in table 34.

Hybrids nominated for testing in 1962 are as follows:

<u>Hybrid</u>	<u>Pedigree</u>
<u>New</u>	
Ia. 5451	(WF9 x B14)(B45 x B57)
Ia. 5456	(WF9 x B14)(B56 x N6)
Ia. 5467	(WF9 x 38-11)(B14 x B57)
Ia. 5469	(WF9 x 38-11)(B45 x B57)
Ind. 1813	(H49 x H55)(H60 x H73)
Ind. 1814	(H49 x H55)(H71 x H73)
Mo. 1036	(B41 x Mo. 11)(C103 x B14)
Mo. 4078W	(Mo. 1W x Ky211)(H30 x K41)
Ohio Exp. 7017	(Oh3C x Oh43)(Hy x C103)
Ohio Exp. 7034	(WF9 x Oh43)(Oh7N x B37)
<u>Retest</u>	
Ia. 5286	(WF9 x 38-11)(B14 x B51)
Ia. 5306	(B14 x CI.31A)(B51 x R101)
<u>Checks</u>	
U.S. 13	(WF9 x 38-11)(L317 x Hy)
AES 809	(WF9 x P8)(Oh43 x C103)
U.S. 523W	(K55 x K64)(Ky27 x Ky49)

The 800 maturity three-way crosses were grown in Illinois, Indiana, Iowa, Kentucky, Missouri, Nebraska, Ohio, Oklahoma, Pennsylvania, and Virginia. The summarized data are presented in table 35.

The 700 maturity double crosses were grown in Illinois, Indiana, Iowa, Missouri, Nebraska, and Ohio. Summarized data are presented in table 36. No new hybrids were nominated for testing in 1962.

Table 34. Summary of performance of uniform 800 maturity double crosses, 1961.

Pedigree	Acre Yield in bushels (1)	Moisture Percent (2)	50% silked (3)	Lodging Root : (4)	Stalk Percent (5)	Ear ht. inches (6)	Corn borer rating (1-9) (7)	Stand Percent (8)
Ia. 5116 (WF9 x B14) (Oh41 x B45)	98	19.9	69	8	17	48	6.3	92
Ia. 5118 (WF9 x Hy) (B14 x C1 31A)	104	21.1	70	21	24	57	6.3	93
Ia. 5120 (WF9 x 38-11) (B14 x B45)	97	19.8	69	5	14	47	6.3	92
Ia. 5286 (WF9 x 38-11) (B14 x B51)	94	19.3	72	12	10	55	5.7	91
Ia. 5306 (B14 x C1 31A) (B51 x R101)	103	19.7	70	14	11	57	6.3	94
Il. 3042 (WF9 x B14) (B40 x Oh45)	100	21.4	67	16	11	47	7.0	90
Il. 3183 (WF9 x R154) (R105 x R153)	101	21.4	68	17	17	50	6.7	92
Il. 3343 (WF9 x B55) (R71 x R74)	109	22.9	69	13	16	55	6.3	93
Ind. 0622 (WF9 x C103) (H71 x B14)	100	20.5	68	11	8	49	6.7	90
Ky. 205W (Ky211 x 33-16) (Ky209 x H21)	102	21.7	70	12	14	57	5.7	92
Mo. 1005 (WF9 x B14) (Ho. 4529 x Ho. 5)	100	21.2	68	15	5	48	7.0	93
Mo. 1023 (WF9 x B41) (Ho. 5 x C103)	102	20.9	69	18	9	48	6.0	93
U.S. 13 (WF9 x 38-11) (Hy x L317)	100	20.6	69	11	30	59	6.0	92
AES 809 (WF9 x F8) (Oh 43 x C103)	99	21.4	69	11	19	48	6.7	93
U.S. 523W (K55 x K64) (Ky27 x Ky49)	98	23.9	73	29	19	56	7.3	93
(1) Illinois, Indiana, Iowa, Kentucky, Missouri, Nebraska, Ohio, Oklahoma								
(2) Illinois, Indiana, Iowa, Kentucky, Missouri, Nebraska, Ohio								
(3) Oklahoma								
(4) Illinois, Iowa, Oklahoma								
(5) Illinois, Iowa, Kentucky, Nebraska, Ohio, Oklahoma								
(6) Iowa, Kentucky, Missouri, Ohio								
(7) Iowa (Ankeny)								
(8) Illinois, Indiana, Iowa, Kentucky, Missouri, Ohio, Oklahoma								
Two-year performance (1960 - 61)								
Ia. 5116	102	19.9	6		18	49		94
Ia. 5118	104	20.7	13		24	56		95
Ia. 5120	100	19.2	3		17	50		94
Il. 3042	102	21.0	10		16	48		94
Il. 3183	100	21.2	13		21	49		93
Il. 3343	108	22.2	7		17	52		94
Ky. 205W	98	21.1	11		18	57		93
Mo. 1005	103	20.6	9		10	48		95
Mo. 1023	105	21.0	14		14	49		95
U.S. 13	102	20.3	8		32	60		94
AES 809	100	21.3	6		20	47		94

Table 35. Summary of performance of uniform 800 maturity three-way crosses, 1961.

Pedigree	Acres in bushels	Yield Moisture Percent	50% silked	Lodging Percent		Ear ht. 100 plants	Ears per bore	Stand Percent
				Root	Stalk	Grade	rating (1-9)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(W9 x Hy) x Ia. 59:1521	108	20.1	71	43	8	49	111	7.3
x Ia. 59:1694	109	18.9	71	34	5	46	113	6.3
x Ia. 59:1988	117	18.5	73	23	12	50	106	7.0
x Va. 144	110	20.1	71	36	10	45	104	6.7
x H 60	110	19.5	72	30	6	48	112	5.7
x d 75	110	21.0	73	30	16	42	104	6.0
x R 71	108	21.9	71	26	10	45	137	6.3
x R 151	105	19.8	70	20	14	47	134	6.3
x R 154	99	19.2	70	42	16	46	117	6.7
x Mo. 11662	104	20.3	72	37	5	49	135	6.7
x N 6	113	19.7	70	59	9	42	105	6.0
x Oh 41	120	22.3	71	50	17	48	132	6.3
Mean	109	20.1	71	36	11	46	118	6.4
(Bl4 x C. I. 31A) x Ia. 59:1521	93	23.5	74	22	7	49	108	5.7
x Ia. 59:1988	120	20.0	74	14	13	50	128	6.0
x Va. 144	122	20.0	73	39	6	49	108	5.7
x H 60	122	19.9	73	3	5	48	130	5.3
x H 74	117	22.6	73	42	5	51	118	5.7
x H 75	117	23.6	73	35	9	47	131	5.0
x F 71	116	21.3	71	30	7	46	153	5.7
x R 151	116	19.7	70	27	8	51	164	6.3
x R 154	110	19.0	71	43	10	49	129	5.3
x Mo. 11662	117	21.1	72	27	6	51	183	6.3
x Mo. (Bl4 x Mo. 11)	116	19.8	72	44	4	51	122	5.7
x N 6	115	21.2	71	25	10	44	105	6.7
x Oh 41	117	22.9	72	29	13	50	124	5.7
Mean	115	21.1	72	29	8	49	131	5.8
(1) Ill., Ind., Iowa, Ky., Mo., Nebr., Ohio., Okla., Pa., Va.				(6) Ind., Iowa, Mo., Ky., Ohio, Va.				
(2) " " " " " " " " " "				(7) Virginia				
(3) Ind., Okla., Va.				(8) Iowa (Ankeny)				
(4) Ill., Okla., Ky., Nebr., Ohio, Okla., Va.				(9) Ill., Ind., Iowa, Ky., Mo., Ohio., Okla., Va.				

Table 36. Summary of performance of uniform 700 maturity double crosses, 1961.

Pedigree	Acre Yield in bushels (1)	Moisture Percent (2)	Lodging Root (3)	Percent Stalk (4)	Ear ht. inches (5)	Corn borer Rating (1-9) (6)	Stand Percent (7)
Ia. 5092 (WF9 x ML4) (BL4 x BL46)	103	20.3	39	8	43	7.0	92
Ia. 5093 (WF9 x ML4) (B37 x BL46)	108	21.6	47	12	42	7.0	95
Ia. 5095 (WF9 x Oh43) (BL4 x BL46)	105	21.2	18	3	45	5.7	93
Ia. 5355 (WF9 x BL4) (A257 x B50)	105	19.9	41	8	46	5.3	92
Ia. 5364 (WF9 x ML4) (BL4 x B55)	100	21.1	46	10	45	6.7	94
II. 3152 (WF9 x ML4) (BL4 x Oh43)	103	20.9	21	12	49	6.7	90
III. 3182A (WF9 x RL15) (RL51 x RL54)	110	21.5	59	12	49	7.3	94
III. 3022 (WF9 x BL4) (M22A x Oh43)	106	22.0	17	5	47	5.7	94
Ia. 4297 (WF9 x I205) (ML4 x 187-2)	98	20.2	48	18	45	6.0	93
AES 704 (WF9 x Oh43) (BL4 x B37)	104	21.4	25	6	47	7.0	91
U.S. 13 (WF9 x 38-11) (Hy x L317)	109	21.6	25	19	56	6.3	95
(1) and (2) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio							
(3) Illinois							
(4) Illinois, Iowa, Nebraska, Ohio							
(5) Iowa, Missouri, Ohio							
(6) Iowa (Arkery)							
(7) Illinois, Indiana, Iowa, Missouri, Ohio							
Two-year performance (1960 - 61)							
Ia. 5092	104	20.6	21	6	44		94
Ia. 5093	106	21.6	24	8	44		95
Ia. 5095	106	21.5	10	3	45		94
III. 3152	102	20.6	11	7	47		92
III. 3182A	109	21.6	33	11	49		94
III. 3022	110	21.7	9	4	46		95
Ia. 4297	99	20.2	29	14	46		94
AES 704	105	21.6	13	4	47		92
U.S. 13	109	22.1	14	15	58		95

The 700 maturity three-way crosses were grown in Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, and Virginia. The summarized data are presented in table 37.

Three-way seed available for testing in 1962 represent a combined 700 and 800 trial in which the two testers are WF9 x Hy and Oh7N x B37. The crosses of which adequate seed is available are as follows:

<u>Line</u>	<u>Source</u>	<u>WF9 x Hy</u>	<u>Oh7N x B37</u>
Ia.60:1229	SSS x H.D.225	x	x
Ia.60:1252	(M14 x A206) x Oh4C	x	x
Ia.60:1279	N32 x B14 ² / ₂	x	x
B51	Corn Borer Syn. #1	x	x
B57	Midland Yellow Dent	x	x
H78	(Oh45 (Mo.21A x NC34))Oh45	x	x
H79	Synthetic A	x	x
N20	SSS _I Syn.	x	x
N28	SSS _I Syn.	x	x
N29	Krug _I Syn.	x	x
N30	Krug _I Syn.	x	x
Oh43B	((Oh45TMS x Woodburn TRF)Oh45) Oh43 ² / ₂	x	x
Ok22	Southwestern Yellow Dent	x	x
Mo.4524	C103 x 187-2	x	x
Pa.70	Oh40B x (?)	x	x
B14		x	x
N6		x	x

The following lines were submitted for use in producing three-way crosses for testing in 1963.

<u>Line</u>	<u>700 maturity</u>	<u>Source</u>
Ia.61:1264		Pa. Early Syn..
Ia.61:1266		Pa. Intermediate Syn.
Ia.61:1275		Pa. Late Syn.
N6G		N6/H.G.26
N13		C103-3-7
R182*		R75* x Oh51A

<u>Line</u>	<u>Source</u>	<u>Line</u>	<u>Source</u>
Ia.61:1255	Synthetic B	N2276-16-2	III Syn.
Ia.61:1262	Synthetic B	N2385-27-2	III Syn.
H81	Synthetic A	N2146-1-2	III Syn.
H82	Oh45(Mo.21A x NC34)Oh45	N313-5-1	III Syn.
H83	Synthetic A	N368-9-7	III Syn.
N2276-6-2	III Syn.	N3106-7-1	III Syn.
		Pa.884P	K155 x A321

*Related to WF9

L. H. Penny, Chairman
J. H. Lonnquist
E. R. Leng

Table 37. Summary of performance of uniform 700 maturity three-way crosses, 1961.

Pedigree	Acre Yield in bushels	Moisture Percent	50% silked	Lodging Root	Percent Stalk	Ear ht. Grade	Ears per 100 plants	Corn borer rating (1-9)	Stand Percent
(29 x B14) x Ia. 59: 1545	102	22.5	74	11	2	46	117	5.7	90
x Pa. 881P	97	19.2	71	8	6	47	104	6.0	76
x Pa. 887P	123	22.8	71	28	2	51	117	6.0	86
x Va. 11A	109	22.7	73	23	4	47	115	6.3	89
x Va. 9520	89	22.0	72	0	1	45	110	5.0	66
x Va. 9347	112	20.4	73	13	3	47	114	4.7	84
x R151	97	21.1	73	13	3	48	118	6.3	76
x R154	117	19.3	72	27	4	49	107	5.3	91
x R181	108	18.1	72	5	3	48	94	5.7	82
x Oh42	126	21.6	70	6	3	43	107	6.0	97
x M14	114	19.6	71	28	13	42	105	6.7	95
x B37	122	21.0	72	22	2	48	108	7.7	96
Mean	110	20.9	72	15	4	47	110	6.0	86
(337 x Oh43) x Ia. 59:1545	114	22.7	73	7	4	49	111	5.7	95
x Ia. 59:1620	126	19.4	70	17	5	51	127	6.0	96
x Pa. 881P	121	20.4	70	28	4	41	106	6.7	95
x Pa. 887P	135	24.3	70	34	2	46	107	6.0	97
x Va. 11A	125	22.7	71	33	2	40	104	5.7	98
x R 151	131	23.8	69	15	7	49	124	7.0	95
x R 154	115	21.1	70	27	4	48	110	6.0	93
x R 151	123	20.5	69	22	1	42	106	5.7	95
Mean	124	21.9	70	23	4	46	112	6.1	96

(1) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(2) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(3) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(4) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(5) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(6) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(7) Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Pennsylvania, Virginia

(8) Iowa, (Ankeny)

(9) Illinois, Indiana, Iowa, Missouri,

Ohio, Virginia

Dr. Penny MOVED the acceptance of the report. The motion was seconded by Lonnquist and passed.

REPORT OF THE SUB-COMMITTEE ON 400-500-600 MATURITY SERIES

Seed requested for 1962 tests	
<u>State</u>	<u>3-way</u>
Pennsylvania	180
Ohio	400
Michigan	400
Indiana	200
Illinois	?
Wisconsin	--
Minnesota	--
South Dakota	250
Nebraska	250
Iowa	200
Missouri	200

Inbreds crossed with WF9 x M14 and W64A x Oh43 are available for testing in 1962.

A548	Ia.60:1266	Mich. 61-3
A595	Oh501	Mich. 61-4
A601	Oh502	Mich. 61-5
A619	Oh503	N4
A623	Mich. 61-1	N22
A627	Mich. 61-2	N22A
		H76

Inbreds nominated for 3-ways to be made in 1962 for testing in 1963.

Ms 200 (Ms24 x High Oil) Ms24
 Ms 201 (Oh40B x R53) Oh40B
 Ms 202 (Oh51A x Oh40B)
 Ms 205 Syn. of W23, A71, A158, W8, WR3, N6, W17, Oh40B
 Ms 216 Pratt O.P. Variety
 Ms 91 (W10 x Ms206) W10
 Ia.61:1246
 N61-2 KIII (Spec. 9.14) Syn.
 N61-3 Dawes W2
 N61-10 Var. Comp. I (Spec. 9.14) Syn.
 N61-11 (I153.HG)B1
 N61-12 (M14.CC)B1
 R181
 R181 Blush

Table 38. Performance data on the 400-500-600 maturity series double-crosses grown in 1961.

Hybrid	Pedigree	(I) Yield bu.	(I) Moisture %	(II) Lodging %	(III) Lodged Root %	(III) Stalk %	(IV) Dropped Ears %	(IV) Ear Ht. in.	(V) Days to milk stage	(VI) Leaf blight %	(VII) Corn grade	(VIII) Aphids %	(IX) Stand %
Il. 3301	(M4 x OH43)(R18 x B14)	102	24.7	5	4	13	0	3.0	47	82	3.3		92
Il. 3302A	(M64A x M14)(R172 x B14)	98	24.2	7	2	16	0	3.0	47	81	4.2		93
Il. 1952	(M64A x A545)(M14 x B14)	97	23.8	10	9	19	0	3.3	43	82	1.7		91
Ia. 5348	(WF9 x OH43)(A257 x B53)	101	26.7	11	3	6	.4	3.0	42	81	4.1		93
Ia. 5349	(WF9 x OH43)(A570 x B53)	99	26.7	9	3	8	0	2.7	38	80	2.5		93
Mich 56-115	(M32 x M64A)(M2109 x Ia. 24)	100	24.6	14	6	18	.3	2.8	45	80	2.5		89
Mich 59-495	(MF9 x OH51A)(A569 x M5125)	92	24.1	31	6	22	.8	3.0	44	82	3.3		89
Mich 59-515	(M557 x M5100)(B14 x M580)	100	26.7	25	14	18	.3	3.0	43	83	1.7		92
Mich 59-538	(M32 x M64A)(M2109 x M5111)	97	24.9	22	8	17	0	3.0	44	81	2.4		93
N 2339 B	WF9 x B14 (M24 x OH43)	100	25.2	9	8	11	.3	3.0	42	82	3.3		91
N 2345 B	(MF9 x B14)(M22 x O 11)	95	26.3	10	8	11	0	3.0	36	81	0.8		89
N 2360 E	(MF9 x B14)(M6 x OH43)	91	26.1	15	9	16	.3	2.8	38	82	3.6		90
MS 514	(M64A x A295)(B14 x A239)	90	22.0	16	4	15	0	3.0	-	-	-		88
Ohio K24	(MF9 x OH51A)(OH33 x OH40B)	89	22.5	21	4	25	.6	3.0	-	-	-		91
Ohio M15	(A x W23)(OH26 x OH51)	80	22.0	40	4	42	0	3.0	-	-	-		84

(I) S. Dakota, Ill., Ill. Detalb, Neb., Ia., Ohio, Ind. Minn., Mich.,
 (II) Neb., and Ind.
 (III) Ill., Ill. Detalb, Ia., Ohio, Minn., Mich.,
 (IV) Neb. & Ia.
 (V) Ia. (ear ht. grade 1-5)
 (VI) Ohio
 (VII) Ohio
 (VIII) Ohio
 (IX) Ia.

Table 39. Performance data on the 400-500-600 maturity series three-way crosses grown in 1961.

Hybrid	(I) Yield bu.	(I) Moisture %	(II) Lodging		(III) Lodged		(IV) Dropped		(V) Ear		(VI) Days		(VII) Ear		(VIII) Leaf		(IX) Corn		(X) Stand %
			%	%	%	%	%	%	Ht.	1-5	in.	Ht.	in.	smut %	Grade	Grade	Grade	%	
(WF9 x M14) Ia59:1588	101	23.5	5	2	25	0	25	0	3.0	41	75	0.8			5.7				96
" B50	91	24.2	5	21	22	.8	3.0	38	76	1.7					6.7				91
" Oh32	84	26.0	5	7	21	2.6	2.0	35	75	1.8					6.7				92
" Oh57	97	22.2	1	9	20	.4	3.0	38	75	2.5					6.7				92
" R181	109	21.3	2	13	24	0	3.0	40	74	2.4					5.3				95
" Mich 60-1	91	22.3	1	7	14	0	2.0	32	75	0.9					6.3				87
" Mich 60-2	98	24.8	9	21	37	0	2.7	45	74	1.6					5.7				92
" Mich 60-3	102	22.5	11	7	29	0	3.0	36	72	5.0					6.7				94
" Mich 60-4	99	21.3	3	15	19	0	2.7	30	74	4.1					6.0				94
" Mich 60-5	92	20.6	1	12	21	0	3.0	41	75	0.9					5.7				91
" R73	99	26.7	1	14	10	0	3.0	43	77	3.5					6.7				92
WF9 x M14	99	23.4	2	18	21	0	2.3	34	74	0.0					7.0				93
(W64A x Oh43) Ia59:1588	101	24.1	0	2	18	0	2.7	38	74	2.6					6.7				91
" B50	104	23.7	2	10	17	0	3.0	40	75	0.0					6.7				90
" Oh32	91	26.2	2	5	17	.4	2.3	36	74	5.0					6.0				92
" Oh57	96	23.0	2	2	23	0	2.7	35	73	0.8					6.7				91
" R181	104	22.2	2	7	16	0	2.7	36	74	5.8					5.7				89

(I) S. Dakota, Ill., Ill. Dekalb, Mich. Neb., Ia, Ohio, Ind., Penn.,
 (II) Neb., (combined root & stalk lodging %)
 (III) S. Dakota, Ill., Ill. Dekalb, Mich., Ia., Ohio, Ind., Penn.,
 (VIII) Ohio (IX) Iowa
 (X) Ill., Ill., Dekalb, Ia., Ohio, Ind.,
 (IV) Neb. & Ia.
 (V) Ia. (ear Ht. grade 1-5)
 (VI) Ohio & Ind.
 (VII) Ohio & Ind.

Table 39. (cont'd.)

Hybrid	Yield bu.	Moisture %	Lodging		Lodged		Dropped		Ear Ht. in.	Days to silk		Leaf blight borer		Corn Aphids	Stand %
			Combined	Root	Stalk	%	%	%		grade	%	grade	%		
(W64A x Oh43) Mich 60-1	94	22.6	1	2	14	0	2.0	32	75	1.6	6.3				91
" Mich 60-2	98	24.2	2	12	25	0	2.7	40	74	3.4	6.0				90
" Mich 60-3	101	23.5	1	3	21	0	2.7	36	71	0.8	6.0				94
" Mich 60-4	105	23.0	6	11	18	0	2.3	32	73	3.3	6.3				95
" Mich 60-5	108	23.1	2	9	19	.9	2.7	42	75	0.0	6.7				93
" H73	89	27.3	2	4	9	0	3.0	39	82	6.8	6.7				87
W64A x Oh43	111	24.7	2	4	10	0	2.0	32	74	0.0	6.7				93
AES 514	93	21.4	3	7	14	0	-	38	74	2.5	-				93
Ohio K24	101	22.5	8	8	25	0	-	39	75	0.0	-				96
Ohio M15	81	22.4	14	6	45	0	-	41	73	2.5	-				93

L. F. Bauman, Chairman
N. P. Neal
E. C. Rossman

Dr. Bauman MOVED for the acceptance of the report. The motion was seconded by Sentz and passed.

REPORT OF THE SUB-COMMITTEE ON THE 100-200-300 MATURITY SERIES

Seed of single crosses produced for 1962 Test
North Dakota

<u>Pedigree</u>	<u>Estimated seed no.</u>	<u>Pedigree</u>	<u>Estimated seed no.</u>
ND363 x ND405	3,600	B8 x MS142	4,000
" SD5	3,000	" A554	4,000
" B8	2,700	" W451	3,000
" MS142	3,000	" W673	2,700
" A554	3,000	" W675	2,000
" W451	2,800	" CO-303	3,000
" W673	1,700*Wis.	" ND474	
" W675	1,500*Wis.	MS142 x A554	1,700*Wis.
" CO-303	2,200	" W451	3,800
" ND474		" W673	3,200
ND405 x SD5	3,000	" W675	2,300
" B8	4,000	" CO-303	3,400
" MS142	3,600	" ND474	
" A554	3,200	A554 x W451	2,000
" W451	5,000	" W673	3,800
" W673	2,700	" W675	2,700
" W675	1,600*Wis.	" CO-303	3,400
" CO-303	2,200		
" ND474		W451 x W673	600**Wis.
SD5 x B8	4,000	" W675	1,100**Wis.
" MS142	2,400	" CO-303	2,000
" A554	4,000	W673 x W675	2,400
" W451	2,800	" CO-303	2,400
" W673	3,500	W675 x CO-303	1,800* Wis.
" W675	2,000	ND474 x W451	
" CO-303	2,000	" W673	
" ND474		" W675	
		" CO-303	

* Low in seed

** Also ND474 was crossed with all 10 lines ND474 x A554 sister cross.
700 seeds.

Table 40 . Summary of performance of uniform 200-300 maturity double crosses 1961.
Tested at Mich., Minn., Morden (Manitoba), N. Dak., Ont. (Guelph), S. Dak., Wis. (Spoonerville).

Pedigree	Hybrid No.	Date of silk	Moist.		Acre yield		Lodging %		Plts. Ear		Shel-ling %
			% of 202	bu. av.	% of 202	Root	Stalk	app. height 1-5 inch.	inch.		
		2	6-7	7	6-7	2	4	2	2	2	
			1/		1/	2/	3/	4/	5/	6/	
W59MxCMDS:A509xMS1334	AES202	7-27	100	75.2	100	22.3	15.5	3.3	27	79.7	
SD105xND203:A90xMS1334	ND34	27	97	76.0	101	18.3	16.8	2.5	28	79.6	
B8xND203:A498xMS1334	M805	28	95	-	102	28.8	10.9	2.2	28	81.3	
A498xA90:MS1334xND203	ML57	28	100	-	104	27.8	14.5	2.8	27	79.7	
R53xMS1334:MS1341xMS91	MS59-82	30	105	-	102	26.6	12.3	3.2	30	82.7	
ND405xND203:A90xMS1334	ND42	28	105	76.6	102	27.3	10.5	2.4	27	79.4	
ND405xND203:B8xA90	ND45	29	107	75.9	101	25.8	10.8	2.5	29	80.5	
B8xMS1334:W10xMS206	MS57-130	8-1	106	-	111	26.0	12.9	2.5	37	82.0	
MS143xMS1334:MS55xMS92	MS59-129	8-1	115	-	109	23.5	18.2 ^a	2.5 ^a	34	82.5	
B8xMS1334:MS92xMS144	MS59-78	7-29	116	-	107	22.3	17.8	3.0	29	81.5	

Moisture Per Cent and Yields in 6 or 7 State Tests

Hybrid No.	Moisture Per Cent							Acres Yield Bu.						
	Mich.	Minn.	Mor.	N.D.	Ont.	S.D.	Wis.	Mich.	Minn.	Mor.	N.D.	Ont.	S.D.	Wis.
AES202	27.0	20.7	44.3	32.1	29.3	33.8	21.1	65.5	77.7	56.7	56.5	98.2	66.2	105.4
ND34	26.3	20.9	41.9	32.7	27.0	33.7	19.0	70.3	80.4	51.3	62.8	101.6	62.4	103.1
Minn.805	24.4	20.2	43.1	33.5	24.8	31.8	-	71.4	77.8	47.3	59.7	106.4	67.4	-
Minn.157	26.0	20.9	42.4	34.5	29.5	34.8	-	68.3	84.4	60.4	59.8	98.1	66.3	-
MS59-82	27.9	(30.8)	46.7	35.9	27.9	36.9	22.6	70.1	(82)	46.4	53.9	118.8	59.1	111.1
ND42	27.5	24.6	43.7	36.7	29.6	36.3	22.8	66.8	81.2	55.9	60.3	97.5	66.2	108.5
ND45	26.1	24.1	46.3	37.1	29.9	37.3	22.0	70.1	78.3	45.4	62.8	103.5	65.0	106.0
MS57-130	26.0	(29.8)	46.2	38.6	28.2	38.1	21.2	84.7	(90)	49.9	58.9	122.9	62.0	117.6
MS59-129	29.6	-	48.7	39.0	30.5	40.3	27.2	80.8	-	51.7	58.3	125.9	62.2	111.5
MS59-78	28.0	(35.0)	48.8	41.3	30.8	40.3	27.4	81.6	(85)	50.6	57.7	113.7	66.5	111.4

Miscellaneous data by stations reporting

AES202 test data by location reporting														
Hybrid No.	Date silking	Lodging %						Plt. App.		Ear height		Shelling %		
		Root			Stalk			rate 1-5		inches		%		
		N.D.	Ont.	Mich.	N.D.	Mich.	Minn.	N.D.	Ont.	Minn.	N.D.	N.D.	Mor.	N.D.
AES202	7-27	7-27	12.6	32	6.5	22	24	9.3	3.0	3.5	30	24	79.1	80.2
ND34	27	28	16.5	20	3.6	19	31	13.4	2.0	3.0	29	28	80.1	79.1
M805	29	28	21.6	36	11.2	12	18	2.5	2.0	2.3	32	24	81.5	-
ML57	28	29	23.5	32	12.2	20	18	7.7	3.0	2.5	31	23	79.7	-
MS59-82	30	30	19.1	34	7.4	(14)	21	6.7	(4.0)	2.5	36	24	81.4	84.0
ND42	28	29	17.5	37	11.3	15	11	4.3	2.0	2.8	31	23	79.2	79.6
ND45	29	29	14.6	37	6.1	19	14	4.2	3.0	2.0	34	24	80.4	80.5
MS57-130	8-1	8-1	20.0	32	3.9	(18)	22	7.5	(3.5)	1.5	41	33	82.1	81.9
MS59-129	8-1	8-1	18.9	28	6.1	-	41	7.5	-	2.0	38	29	82.3	82.7
MS59-78	7-29	7-29	11.5	33	6.0	(26)	35	4.2	(4.0)	2.0	34	24	81.3	81.6

1/ AES202-100%; other hybrids either 6 or 7 other stations in % of AES202.

2/ Two stations Mich., N. Dak.; other stations, no root lodging or no report.

3/ Four stations Mich., Minn., N. Dak., Ont.

4/ Two stations Minn., N. Dak.; others not completed

5/ Morden, N. Dak.

6/ N. Dak., Wis.

a Adjusted

() Minn. Central zone - not used in averages.

Wm. Wildakas, Chairman

E. H. Rinke

A. M. Stromen

It was MOVED by Wiidakas that the report be accepted. The motion was seconded by Strommen and passed.

The conference then returned to a consideration of plans for the 1962 stalk rot tests. After considerable discussion it was decided to discontinue the yield test phases on a uniform basis. Ample seed is available for the 500-600 maturity series and this will be evaluated at some locations. The major emphasis will be placed on the disease aspects of the study. This phase of the work will be handled as in 1961.

Chairman Russell then called for the report of the Nominating Committee. Dr. Rossman stated that J. C. Sentz had been selected as their candidate for the Executive Committee. There being no nominations from the floor Bauman MOVED that the secretary be instructed to cast a unanimous ballot for the candidate. The motion was seconded by Crane and passed.

A motion was made by Loeffel expressing the appreciation of the committee to the Chairman for the program and excellent arrangements. The motion was seconded and passed. Chairman Russell then expressed his appreciation to the guest speakers for their participation and to the various committees for their presentation of reports. The meeting was adjourned at 11:30 a. m. A meeting of the Executive Committee followed and Dr. E. R. Leng was elected chairman for 1963.

Officers and Committee Membership for 1962-63

Administrative Adviser

N. J. Volk

Executive Committee

Earl R. Leng, Chairman 1960-1963

W. A. Russell 1961-1964

E. J. Dollinger 1961-1965

J.C. Sentz 1962-1966

Committees for 1962-1963

Preservation of Germplasm

E. J. Dollinger, J. H. Lonnquist and D. B. Shank (Chairman)

Grouping of Lines for Breeding Purposes

L. F. Bauman, N. P. Neal, W. A. Russell (Chairman)

Cytoplasmic Sterility and Restorers

J. H. Lonnquist, W. A. Russell, J. B. Beckett (Chairman)

Meeting Place

D. B. Shank, M. S. Zuber, P. Crane (Chairman)

Stalk Rot

Paul Hoppe, M. S. Zuber, A. L. Hooker (Chairman)

Uniform Tests in the 900 Maturity Series

P. J. Loesch, M. S. Zuber, F. A. Loeffel (Chairman)

Uniform Tests in the 700-800 Maturity Series

E. R. Leng, J. H. Lonnquist, L. H. Penny (Chairman)

Uniform Tests in the 400-500-600 Maturity Series

N. P. Neal, E. C. Rossman, L. F. Bauman (Chairman)

Uniform Tests in the 100-200-300 Maturity Series

E. H. Rinke, A. M. Strommen, Wm. Wiidakas (Chairman)

ROSTER OF ATTENDANCE

Canada

Donovan, L. S.
Giesbrecht, John

Illinois

Beckett, J. B. (U.S.D.A.)
Hooker, A. L.
Leng, E. R.

Indiana

Bauman, L. F.
Crane, Paul
Volk, N. J.

Iowa

Dicke, F. F. (U.S.D.A.)
Eberhart, S. A. (U.S.D.A.)
Penny, L. H. (U.S.D.A.)
Scott, G. E. (U.S.D.A.)
Russell, W. A.

Kentucky

Loeffel, F. A.

Maryland (Beltsville)

Sprague, G. F. (U.S.D.A.)

Michigan

Rossman, E. C.

Minnesota

Sentz, J. C.

Missouri

Zuber, M. S. (U.S.D.A.)

Nebraska

Gardner, C. O.
Lindsey, M. F.
Lonnquist, J. H.
Williams, Norman

North Carolina

Hallauer, A. R. (U.S.D.A.)

North Dakota

Wiidakas, Wm.

Ohio

Dollinger, E. J.
Findley, Jr., Wm. R. (U.S.D.A.)
Guthrie, W. D. (U.S.D.A.)

Pennsylvania

Thomas, W. I.

South Dakota

Beatty, D. W.
Shank, D. B.

Wisconsin

Hoppe, P. E. (U.S.D.A.)
Neal, N. P.
Strommen, A. M.